MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

G. C. Battle

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Sincerely. John Q. Myers

TRANSACTIONS

OF THE

MEDICAL SOCIETY

OF THE

STATE OF NORTH CAROLINA

DIVISION OF HEALTH SCIENCES LIBRARY

SEVENTY-FOURTH ANNUAL SESSION

HELD AT

DURHAM, NORTH CAROLINA

APRIL 18, 19 and 20, 1927

President

JOHN Q. MYERS, M.D., Charlotte

Secretary-Treasurer

L. B. McBRAYER, M.D., F.A.C.P., Southern Pines

Reporter

MISS MARY ROBINSON, Raleigh

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"It is understood that the Society is not to be considered as indorsing all the views and opinions of authors of papers published in the Transactions of the Society."—*Extract from By-Laws, Chapter 10, Section 8.*

EARLY HISTORY OF THE NORTH CAROLINA MEDICAL SOCIETY, FROM ORGANIZATION TO 1804

Date	Place	President	Vice-Presidents	Corresponding Secretary	Secretary	Recording Secretary	Treasurer	Censors
Dec. 17, 1799, or April 16, 1800	Raleigh	Richard Fenner	Nathaniel Loomis John Clalborne	Calvin Jones		Wm. B. Hill	Cargill Massenburg	Sterling Wheaton James Webb Jas. John Pasteur Jason Hand
Dec. 1, 1800	Raleigh	Richard Fenner			Sterling Wheaton			
Dec. 1, 1801	Raleigh	John C. Osborne	Thomas Mitchell Richard Fenner	Calvin Jones	Sterling Wheaton		Cargill Massenburg	James Webb John Sibley
1802	Raleigh	John C. Osborne		Calvin Jones				
1803	Raleigh	John C. Osborne		Calvin Jones				
1804	Raleigh	John C. Osborne		Calvin Jones				

HISTORY OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM 1849 TO 1926
*Missing Data Not to be Found in Record

Date	Place of Meeting	Number in Attendance	President	Vice-Presidents*	Secretary	Treasurer*	Members on Roll*	Honorary Members*	Honorary Fellows*
1849	Raleigh	25	F. J. Hill	.....	W. H. McKee	.....	25	.....	.....
1 1850	Raleigh	24	E. Strudwick	F. J. Haywood, C. E. Johnson, J. E. Williason, W. G. Thomas.	W. H. McKee	W. G. Hill	38	9	.....
2 1851	Raleigh	23	E. Strudwick	C. E. Johnson.	W. H. McKee	W. G. Hill	46	9	.....
3 1852	Wilmington	38	J. E. Williamson	Thomas N. Cameron, William G. Hill, Johnston B. Jones, N. J. Pittman.	E. B. Haywood	J. J. W. Tucker	72	12	.....
4 1853	Fayetteville	24	J. E. Williamson	William G. Hill, Johnston B. Jones, J. B. G. Myers, N. J. Pittman.	W. W. Harris	Daniel Dupree	80	14	.....
5 1854	Raleigh	37	J. H. Dickson	N. J. Pittman, J. B. G. Myers, J. Graham Tull, A. D. McLean.	S. S. Satchwell	Daniel Dupree	84	17	.....
6 1855	Salisbury	23	J. H. Dickson	J. Graham Tull, Owen Hadley, A. D McLean, Hugh Kelly.	S. S. Satchwell	J. B. Dunn	96	18	.....
7 1856	Raleigh	35	C. E. Johnson	Marcellus Whitehead, E. R. Gibson, Johnston B. Jones, O. F. Manson.	S. S. Satchwell	J. B. Dunn	101	22	.....
8 1857	Edenton	25	C. E. Johnson	Marcellus Whitehead, O. F. Manson, H. W. Faison, E. T. Gibson.	W. G. Thomas	J. B. Dunn	113	16	.....
9 1858	New Bern	69	W. H. McKee	Edward Warren, C. W. Graham, Caleb Winslow, A. B. Pierce.	W. G. Thomas	J. B. Dunn	172	18	.....
10 1859	Statesville	81	W. H. McKee	James G. Ramsey, P. E. Hines, J. R. Mercer, W. T. Howard.	W. G. Thomas	C. W. Graham	.....	.....	.....
11 1860	Washington	64	N. J. Pittman	P. T. Henry, R. H. Winborne, M. Whitehead, T. S. Leach.	W. G. Thomas	C. W. Graham	232	18	.....
12 1861	Morganton	23	N. J. Pittman	J. J. Summerell, C. T. Murphy, G. W. Hodges, W. A. B. Norcom.	W. G. Thomas	C. W. Graham	244	18	.....
13 1866	Raleigh	20	J. J. Summerell	E. Burke Haywood, R. H. Winborne, W. L. Barrow, J. W. Jones.	W. G. Thomas	C. W. Graham	.....	.....	.....
14 1867	Tarboro	41	W. G. Thomas	.....	S. S. Satchwell	C. W. Graham	288	11	.....
15 1868	Warrenton	27	S. S. Satchwell	Hugh Kelly, George A. Foote, Charles J. O'Hagan, J. H. Baker.	Thomas F. Wood	J. W. Jones	.....	.....	.....
16 1869	Salisbury	36	E. B. Haywood	Thomas E. Wilson, A. B. Pierce, C T. Murphy, M. A. Locke.	Thomas F. Wood	J. W. Jones	.....	.....	.....
17 1870	Wilmington	38	C. J. O'Hagan	E. A. Anderson, F. N. Luckey, W. R. Sharpe, R. L. Payne.	Thomas F. Wood	J. W. Jones	.....	.....	.....
18 1871	Raleigh	35	Hugh Kelly	D. N. Patterson, R. C. Pearson, J. B. Seavy, G. L. Kirby.	Thomas F. Wood	J. W. Jones	.....	.....	.....
19 1872	New Bern	34	W. G. Hill	H. W. Faison, R. I. Hicks, G. H. Macon, W. A. B. Norcom.	James McKee	J. W. Jones	.....	.....	.....

20	1873	Statesville	43	M. Whitehead	W. T. Ennett, William Little, Charles Duffy, T. P. Jerman.	James McKee	H. T. Bahnson	.....	.....	.....
21	1874	Charlotte	56	W. A. B. Norcom	J. B. Jones, R. F. Lewis, C. G. Cox, J. L. Knight.	James McKee	H. T. Bahnson	.....	.....	.....
22	1875	Wilson	60	J. W. Jones	Walker Debnam, J. A. Gibson, William Little, D. N. Patterson.	James McKee	H. T. Bahnson	148	5	.....
23	1876	Fayetteville	33	Peter E. Hines	J. H. Baker, G. G. Smith T. D. Haigh, J. K. Hall.	James McKee	H. T. Bahnson	157	4	.....
24	1877	Salem	42	George A. Foote	J. K. Hall, B. W. Robinson, A. Holmes, A. A. Hill.	James McKee	A. G. Carr	177	4	.....
25	1878	Goldsboro	79	R. L. Payne	E. M. Rountree, Richard Anderson, S. B. Flowers, L. A. Stith.	L. J. Picot	A. G. Carr	194	6	.....
26	1879	Greensboro	109	Chas. Duffy, Jr.	J. A. Gibson, Willis Alston, James McKee, A. A. Hill.	L. J. Picot	A. G. Carr	198	6	.....
27	1880	Wilmington	105	J. F. Shaffner	J. K. Hall, W. C. McDuffie, W. R. Wilson, R. F. Lewis.	L. J. Picot	A. G. Carr	225	6	.....
28	1881	Asheville	92	R. B. Haywood	J. E. McRee, W. H. Lilly, R. H. Speight, W. J. H. Bellamy.	L. J. Picot	A. G. Carr	254	6	.....
29	1882	Concord	65	Thos. F. Wood	T. J. Moore, D. J. Cain, S. E. Evans, John McDonald.	L. J. Picot	A. G. Carr	297	7	.....
30	1883	Tarboro	112	J. K. Hall	A. W. Knox, J. M. Hadley, E. S. Foster, John Whitehead.	L. J. Picot	A. G. Carr	310	7	.....
31	1884	Raleigh	112	A. B. Pierce	F. W. Potter, G. W. Graham, R. Dillard, G. W. Long.	L. J. Picot	A. G. Carr	348	7	.....
32	1885	Durham	173	W. C. McDuffie	James McKee, T. E. Anderson, W. H. Whitehead, A. G. Carr.	W. C. Murphy	R. L. Payne, Jr.	424	6	.....
33	1886	New Bern	113	Joseph Graham	H. T. Bahnson, L. J. Picot, J. L. McMillan, W. W. Faison.	J. M. Baker	C. M. Van Poole	438	7	.....
34	1887	Charlotte	112	H. T. Bahnson	G. G. Smith, J. L. Nicholson, C. M. Van Poole, H. B. Ferguson.	J. M. Baker	C. M. Van Poole	452	7	.....
35	1888	Fayetteville	133	T. D. Haigh	W. T. Ennett, J. A. Dunn, T. E. Anderson.	J. M. Baker	M. P. Perry	306	6	.....
36	1889	Elizabeth C.	50	W. T. Ennett	W. J. Jones, S. W. Stevenson, G. W. Long.	J. M. Baker	M. P. Perry	410	3	.....
37	1890	Oxford	160	G. G. Thomas	R. L. Payne, Jr., Richard Dillard, S. D. Booth.	J. M. Hays	M. P. Perry	414	6	.....
38	1891	Asheville	135	R. H. Lewis	S. W. Battle, J. L. Nicholson, W. H. Lilly.	J. M. Hays	M. P. Perry	422	6	.....
39	1892	Wilmington	162	W. T. Cheatham	F. S. Burbank, J. W. Long, W. H. H. Cobb, W. D. Hilliard.	J. M. Hays	M. P. Perry	431	6	.....
40	1893	Raleigh	221	J. W. McNeill	V. C. Galloway, H. H. Harris, J. M. Hadley, Thomas Hill.	R. D. Jewett	M. P. Perry	447	5	3

HISTORY OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM 1849 to 1926. *(Continued)*
*Missing Data Not to Be Found in Records

	Date	Place of Meeting	Number in Attendance*	President	Vice Presidents	Treasurer	Secretary	Members on Roll	Honorary Members	Honorary Fellows
41	1894	Greensboro	166	W. H. H. Cobb	J. A. Hodges, R. W. Tate, Willis Alston, M. H. Fletcher.	R. D. Jewett	M. P. Perry	454	5	3
42	1895	Goldsboro	.....	J. H. Tucker	J. Howell Way, W. H. Harrell, O. McMullan, C. A. Misenheimer.	R. D. Jewett	M. P. Perry	436	7	3
43	1896	Winston-Salem	158	R. L. Payne	S. D. Booth, J. P. Munroe, J. A. Burroughs, J. E. Grimsley.	R. D. Jewett	M. P. Perry	452	7	3
44	1897	Morehead City	103	P. L. Murphy	J. C. Walton, A. A. Kent, M. R. Adams, B. L. Long.	R. D. Jewett	M. P. Perry	406	6	3
45	1898	Charlotte	.....	Francis Duffy	E. C. Register, A. T. Cotton, J. B. H. Knight, F. H. Russell.	R. D. Jewett	M. P. Perry	437	6	21
46	1899	Asheville	152	L. J. Picot	I. W. Faison, J. W. White, H. H. Dodson, W. C. Brownson.	Geo. W. Pressley	G. T. Sikes	489	6	16
47	1900	Tarboro	115	George W. Long	C. M. Van Poole, James M. Parrott, T. B. Williams, W. D. Hilliard.	Geo. W. Pressley	G. T. Sikes	482	6	21
48	1901	Durham	186	Julian M. Baker	M. H. Fletcher, C. A. Julian, D. A. Stanton, E. M. Summerell.	Geo. W. Pressley	G. T. Sikes	515	5	18
49	1902	Wilmington	147	Robert S. Young	A. G. Carr, E. D. Dixon-Carroll, I. M. Taylor, J. M. Parrott.	Geo. W. Pressley	G. T. Sikes	546	5	20
50	1903	Hot Springs	155	A. W. Knox	E. G. Moore, C. A. Julian, W. W. McKenzie, J. L. Nicholson.	J. Howell Way	G. T. Sikes	530	6	19
51	1904	Raleigh	326	H. B. Weaver	John Hey Williams, John C. Rodman, S. F. Pfohl.	J. Howell Way	G. T. Sikes	1,033	8	17
52	1905	Greensboro	361	David T. Tayloe	C. A. Julian, John T. Burrus, I. W. Faison.	J. Howell Way	G. T. Sikes	1,175	8	17
53	1906	Charlotte	406	E. C. Register	L. B. McBrayer, W. H. Cobb, Jr., W. O. Spencer.	J. Howell Way	G. T. Sikes	1,234	8	16
54	1907	Morehead City	217	Samuel D. Booth	C. M. Strong, J. E. McLaughlin, W. F. Hargrove.	David A. Stanton	H. McK. Tucker	888	7	16
55	1908	Winston-Salem	372	J. Howell Way	J. E. Stokes, J. A. Turner, W. H. Dixon.	David A. Stanton	H. McK. Tucker	998	7	28
56	1909	Asheville	337	J. F. Highsmith	C. M. Van Poole, D. A. Garrison, D. O. Dees.	David A. Stanton	H. McK. Tucker	1,067	7	25
57	1910	Wrightsville Beach	276	†J. A. Burroughs E. J. Wood	E. J. Wood, John Q. Myers, L. D. Wharton.	David A. Stanton	H. D. Walker	1,080	8	35
58	1911	Charlotte	412	C. M. VanPoole	J. V. McGougan, W. E. Warren, L. N. Glenn.	David A. Stanton	H. D. Walker	880	8	45
59	1912	Hendersonville	296	A. A. Kent	J. P. Munroe, W. P. Horton, J. G. Murphy.	David A. Stanton	H. D. Walker	950	8	44
60	1913	Morehead City	232	J. P. Munroe	F. R. Harris, E. S. Bullock, L. B. Morse,	John A. Ferrell	H. D. Walker	1,133	8	40
61	1914	Raleigh	431	J. M. Parrott	E. T. Dickinson, J. T. J. Battle, D. E. Sevier	John A. Ferrell	H. D. Walker	1,228	8	47
62	1915	Greensboro	443	L. B. McBrayer	J. J. Phillips, C. W. Moseley, S. M. Crowell.	John A. Ferrell	H. D. Walker	1,221	9	68

†Died during his term of office; succeeded by E. J. Wood, first vice-president.

63	1916	Durham	406	M. H. Fletcher Charles O'H.	J. L. Nicholson, L. N. Glenn, W. H. Harrison.	Benj. K. Hays	W. M. Jones	1,228	10	79
64	1917	Asheville	280	Laughinghouse	D. J. Hill, J. L. Spruill, J. H. Shuford.	Benj. K. Hays	W. M. Jones	1,271	11	81
65	1918	Pinehurst	291	I. W. Faison	Wm. deB. MacNider, Jos. B. Greene, Ben F. Royal.	Benj. K. Hays	W. M. Jones	1,087	11	81
						Secy-Treas.	Acting			
66	1919	Pinehurst	335	Cyrus Thompson	J. W. Halford, T. W. Davis, A. McN. Blair.	Benj. K. Hays	L. B. McBrayer	1,306	11	100
67	1920	Charlotte	479	C. V. Reynolds	H. D. Walker, F. Stanley Whitaker, Thos. I. Fox.	Benj. K. Hays	L. B. McBrayer	1,497	12	100
68	1921	Pinehurst	404	T. E. Anderson	C. S. Lawrence, W. H. Ward, J. M. Manning.	Benj. K. Hays	L. B. McBrayer	1,491	12	93
						Secretary-Treasurer				
69	1922	Winston-Salem	507	H. A. Royster	W. T. Parrott, B. C. Nalle, J. R. McCracken.	L. B. McBrayer		1,571	12	100
70	1923	Asheville	356	J. W. Long	F. M. Hanes, T. C. Johnson, B. L. Long.	L. B. McBrayer		1,592	9	101
71	1924	Raleigh	525	J. V. McGougan	J. L. Spruill, ‡Eugene B. Glenn, D. A. Garrison.	L. B. McBrayer		1,604	9	106
72	1925	Pinehurst	550	Albert Anderson	W. L. Dunn, A. E. Bell, K. G. Averitt.	L. B. McBrayer		1,657	10	116
73	1926	Wrightsville Beach	445	Wm. deB. MacNider	J. P. Matheson, W. W. Dawson, H. H. Bass.	L. B. McBrayer		1,663	10	107
74	1927	Durham	653	John Q. Myers	Dr. J. W. Carroll, Dr. A. Y. Linville, Dr. C. H. Cocke.	L. B. McBrayer		1,691	10	121

‡Died during his term of office.

ROSTER OF MEMBERS OF THE VARIOUS BOARDS OF MEDICAL EXAMINERS OF THE STATE OF NORTH CAROLINA

FIRST BOARD

JAMES H. DICKSON, Wilmington 1859-1866
CHARLES E. JOHNSON, Raleigh 1859-1866
CALEB WINSLOW, Hertford 1859-1866
OTIS F. MANSON, Townsville 1859-1866
WILLIAM H. McKEE, Raleigh 1859-1866
CHRISTOPHER HAPPOLDT, Morganton 1859-1866
J. GRAHAM TULL, New Bern 1859-1866
SAMUEL T. IREDELL, Secretary 1859-1866

SECOND BOARD

N. J. PITTMAN, Tarboro 1866-1872
E. BURKE HAYWOOD, Raleigh 1866-1872
R. H. WINBORNE, Edenton 1866-1872
S. S. SATCHWELL, Rocky Point 1866-1872
J. J. SUMMERELL, Salisbury 1866-1872
R. B. HAYWOOD, Raleigh 1866-1872
M. WHITEHEAD, Salisbury 1866-1868
J. F. SHAFFNER, Salem 1868-1872
WILLIAM LITTLE, Secretary 1866-1867
THOMAS F. WOOD, Secretary, Wilmington 1867-1872

THIRD BOARD

CHARLES J. O'HAGAN, Greenville 1872-1878
W. A. B. NORCOM, Edenton 1872-1878
C. TATE, Murphy 1872-1878
GEORGE A. FOOTE, Warrenton 1872-1878
J. W. JONES, Tarboro 1872-1878
R. L. PAYNE, Lexington 1872-1878
CHARLES DUFFY, JR., Secretary, New Bern 1872-1878

FOURTH BOARD

PETER E. HINES, Raleigh 1878-1884
THOMAS D. HAIGH, Fayetteville 1878-1884
GEORGE L. KIRBY, Goldsboro 1878-1884
THOMAS F. WOOD, Wilmington 1878-1884
JOSEPH GRAHAM, Charlotte 1878-1884
[1]ROBERT I. HICKS, Williamston 1878-1880
[2]RICHARD H. LEWIS, Raleigh 1880-1884
HENRY T. BAHNSON, Secretary, Salem 1878-1884

FIFTH BOARD

WILLIAM R. WOOD, Scotland Neck 1884-1890
AUGUSTUS W. KNOX, Raleigh 1884-1890
FRANCIS DUFFY, New Bern 1884-1890
PATRICK L. MURPHY, Morganton 1884-1890
WILLIS ALSTON, Littleton 1884-1890
J. A. REAGAN, Weaverville 1884-1890
W. J. H. BELLAMY, Secretary, Wilmington 1884-1890

SIXTH AND SEVENTH BOARDS

R. L. PAYNE, JR., Lexington 1890-1892
GEORGE W. PUREFOY, Asheville 1890-1892
GEORGE G. THOMAS, Wilmington 1890-1894
ROBERT S. YOUNG, Concord 1890-1894
WILLIAM H. WHITEHEAD, Rocky Mount 1890-1896
GEORGE W. LONG, Graham 1890-1896
L. J. PICOT, Secretary, Littleton 1890-1896
JULIAN M. BAKER, Tarboro 1892-1898
H. B. WEAVER, Secretary, Asheville 1892-1898
[3]J. M. HAYS, Greensboro 1894-1897
[4]KEMP P. BATTLE, JR., Raleigh 1897-1900

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[1]Resigned before expiration of term.
[2]Elected for unexpired term of Dr. Hicks.
[3]Died before the expiration of his term.
[4]Elected to serve unexpired term of Dr. Hays.

[1]THOMAS S. BURBANK, Wilmington.....1894-1898
[2]WILLIAM H. H. COBB, Goldsboro.....1898-1900
[3]RICHARD H. WHITEHEAD, Chapel Hill.....1896-1898
[3]J. HOWELL WAY, Secretary, Waynesville.....1898-1902
DAVID T. TAYLOE, Washington.....1896-1902
THOMAS E. ANDERSON, Secretary, Statesville.....1896-1902
[4]ALBERT ANDERSON, Wilson.....1898-1902
[4]EDWARD C. REGISTER, Charlotte.....1898-1902
[4]THOMAS S. McMULLAN, Hertford.....1900-1902
[4]JOHN C. WALTON.....1900-1902

EIGHTH BOARD

A. A. KENT, Lenoir.....1902-1908
CHARLES O'H. LAUGHINGHOUSE, Greenville.....1902-1908
M. H. FLETCHER, Asheville.....1902-1908
JAMES M. PARROTT, Kinston.....1902-1908
J. T. J. BATTLE, Greensboro.....1902-1908
FRANK H. RUSSELL, Wilmington.....1902-1908
[1]GEORGE W. PRESSLY, Secretary, Charlotte.....1902-1906
[5]G. T. SIKES, Secretary, Grissom.....1906-1908

NINTH BOARD

LEWIS B. McBRAYER, Asheville.....1908-1914
JOHN C. RODMAN, Washington.....1908-1914
WILLIAM W. McKENZIE, Salisbury.....1908-1914
HENRY H. DODSON, Greensboro.....1908-1914
JOHN BYNUM, Winston-Salem.....1908-1914
J. L. NICHOLSON, Richlands.....1908-1914
BENJ. K. HAYS, Secretary, Oxford.....1908-1914

TENTH BOARD

ISAAC M. TAYLOR, Morganton.....1914-1920
JOHN Q. MYERS, Charlotte.....1914-1920
JACOB F. HIGHSMITH, Fayetteville.....1914-1920
MARTIN L. STEVENS, Asheville.....1914-1920
[6]CHARLES T. HARPER, Wilmington.....1914-1915
[7]EDWIN G. MOORE, Elm City.....1915-1920
[8]JOHN G. BLOUNT, Washington.....1914-1920
HUBERT A. ROYSTER, Secretary, Raleigh.....1914-1920

ELEVENTH BOARD

LESTER A. CROWELL, Lincolnton.....1920-1926
WILLIAM P. HOLT, Duke.....1920-1926
J. GERALD MURPHY, Wilmington.....1920-1926
LUCIUS N. GLENN, Gastonia.....1920-1926
CLARENCE A. SHORE, Raleigh.....1920-1926
WILLIAM M. JONES, Greensboro.....1920-1926
KEMP P. B. BONNER, Secretary, Morehead City.....1920-1926

TWELFTH BOARD

W. W. DAWSON, President, Grifton.....1926-1932
T. W. M. LONG, Roanoke Rapids.....1926-1932
W. HOUSTON MOORE, Wilmington.....1926-1932
J. K. PEPPER, Winston-Salem.....1926-1932
PAUL H. RINGER, Asheville.....1926-1932
FOY ROBERSON, Durham.....1926-1932
JOHN W. McCONNELL, Secretary, Davidson.....1926-1932

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[1]Resigned before the expiration of his term.
[2]Elected to serve the unexpired term of Dr. Burbank.
[3]Elected to serve the unexpired term of Dr. Whitehead.
[4]Elected for short term expiring in 1902.
[5]Elected to serve the unexpired term of Dr. Pressly.
[6]Died before the expiration of his term.
[7]Elected to serve the unexpired term of Dr. Harper.
[8]Died a few months before the expiration of his term; such a short time that the vacancy was not filled.

NOTE: In 1890 the Medical Society of the State of North Carolina adopted the plan of electing members of the Board in such a manner that the terms would expire at different intervals of two years. This practice was followed for twelve years, or until 1902, when the plan was abandoned; an equivalent of two legal terms of six years each. It is evident that the Society arranged to abandon the policy as early as 1898, as two members were elected for short terms, and two years later two other members were elected for still shorter terms. It is therefore impossible to separate the sixth and seventh Boards, since the membership was overlapping.

ROSTER OF MEMBERS NORTH CAROLINA STATE BOARD OF HEALTH FROM ORGANIZATION IN 1877 TO 1927

Name	Address	Appointed by	Term
S. S. Satchwell, M.D., President	Rocky Point	State Society	1877 to 1878
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1877 to 1878
Joseph Graham, M.D.	Charlotte	State Society	1877 to 1878
Charles Duffy, Jr., M.D.	New Bern	State Society	1877 to 1878
Peter E. Hines, M.D.	Raleigh	State Society	1877 to 1878
George A. Foote, M.D.	Warrenton	State Society	1877 to 1878
S. S. Satchwell, M.D., President	Rocky Point	State Society	1878 to 1884
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1878 to 1884
Charles J. O'Hagan, M.D., President	Greenville	State Society	1878 to 1882
George A. Foote, M.D.	Warrenton	State Society	1878 to 1882
Marcellus Whitehead, M.D.	Salisbury	State Society	1878 to 1880
R. L. Payne, M.D.	Lexington	State Society	1878 to 1880
H. G. Woodfin, M.D.	Franklin	Gov. Z. B. Vance	1878 to 1880
A. R. Ledeux, Chemist	Chapel Hill	Gov. Z. B. Vance	1878 to 1880
William Cain, Civil Engineer	Charlotte	Gov. Z. B. Vance	1878 to 1880
R. L. Payne, M.D.	Lexington	State Society	1881 to 1887
M. Whitehead, M.D., President	Salisbury	State Society	1881 to 1884
J. M. Lyle, M.D.	Franklin	Gov. T. J. Jarvis	1881 to 1883
William Cain, Civil Engineer	Charlotte	Gov. T. J. Jarvis	1881 to 1883
W. G. Simmons, Chemist	Wake Forest	Gov. T. J. Jarvis	1881 to 1883
J. W. Jones, M.D., President	Wake Forest	State Society	1883 to 1889
John McDonald, M.D.	Washington	State Society	1883 to 1889
S. H. Lyle, M.D.	Franklin	Gov. T. J. Jarvis	1883 to 1885
W. G. Simmons, Chemist	Wake Forest	Gov. T. J. Jarvis	1883 to 1885
Arthur Winslow, Civil Engineer	Raleigh	Gov. T. J. Jarvis	1883 to 1896
R. H. Lewis, M.D.	Raleigh	State Board of Health	1884 to 1893
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1885 to 1887
William D. Hilliard, M.D.	Asheville	State Society	1885 to 1891
Arthur Winslow, Civil Engineer	Raleigh	Gov. A. M. Scales	1885 to 1891
W. G. Simmons, Chemist	Wake Forest	Gov. A. M. Scales	1885 to 1887
J. H. Tucker, M.D.	Henderson	Gov. A. M. Scales	1885 to 1887
R. H. Lewis, M.D., Secretary	Raleigh	State Society	1887 to 1893
H. T. Bahnson, M.D., President	Winston	State Society	1887 to 1888
Arthur Winslow, Civil Engineer	Raleigh	Gov. A. M. Scales	1887 to 1889
W. G. Simmons, Chemist	Wake Forest	Gov. A. M. Scales	1887 to 1889
J. H. Tucker, M.D.	Henderson	Gov. A. M. Scales	1888 to 1891
J. L. Ludlow, Civil Engineer	Winston	Gov. A. M. Scales	1888 to 1891
J. H. Tucker, M.D.	Henderson	Gov. D. G. Fowle	1888 to 1891
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. D. G. Fowle	1889 to 1893
J. L. Ludlow, Civil Engineer	Winston	Gov. D. G. Fowle	1889 to 1892
J. A. Hodges, M.D.	Fayetteville	State Society	1889 to 1893
J. M. Baker, M.D.	Farboro	State Society	1891 to 1893
J. H. Tucker, M.D.	Henderson	Gov. T. M. Holt	1891 to 1893
F. P. Venable, Ph.D. Chemist	Chapel Hill	Gov. T. M. Holt	1891 to 1892
J. L. Ludlow, Civil Engineer	Winston	Gov. T. M. Holt	1891 to 1897
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1892 to 1897
George G. Thomas, M.D., President	Wilmington	State Board of Health	1891 to 1895
S. Westray Battle, M.D.	Asheville	State Society	1892 to 1895
W. H. Harrell, M.D.	Williamston	State Society	1893 to 1895
John Whitehead, M.D.	Salisbury	State Board of Health	1893 to 1895
W. H. G. Lucas	White Hall	Gov. Elias Carr	1893 to 1895
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. Elias Carr	1893 to 1895
John C. Chase, Civil Engineer	Wilmington	Gov. Elias Carr	1893 to 1895
R. H. Lewis, M.D., Secretary	Raleigh	Gov. Elias Carr	1894 to 1897
W. P. Beall, M.D.	Greensboro	Gov. Elias Carr	1895 to 1897
W. J. Lumsden, M.D.	Elizabeth City	Gov. Elias Carr	1895 to 1897
John Whitehead, M.D.	Salisbury	State Society	1895 to 1897
W. H. Harrell, M.D.	Williamston	State Society	1895 to 1897
W. P. Beall, M.D.	Greensboro	Gov. Elias Carr	1895 to 1897
R. H. Lewis, M.D., Secretary	Raleigh	Gov. Elias Carr	1895 to 1897
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. Elias Carr	1897 to 1899
John C. Chase, Civil Engineer	Wilmington	Gov. Elias Carr	1897 to 1899
Charles J. O'Hagan, M.D.	Greenville	Gov. D. L. Russell	1897 to 1899
John D. Spicer, M.D.	Goldsboro	Gov. D. L. Russell	1897 to 1899
J. L. Nicholson, M.D.	Richlands	Gov. D. L. Russell	1897 to 1899
R. H. Lewis, M.D., Secretary	Raleigh	Gov. D. L. Russell	1899 to 1901
A. W. Shaffer, Civil Engineer	Raleigh	Gov. D. L. Russell	1899 to 1901
Charles J. O'Hagan, M.D.	Greenville	Gov. D. L. Russell	1899 to 1901
J. L. Nicholson, M.D.	Richlands	Gov. D. L. Russell	1899 to 1901
Albert Anderson, M.D.	Wilson	Gov. D. L. Russell	1899 to 1901
R. H. Lewis, M.D., Secretary	Raleigh	Gov. D. L. Russell	

*Died in 1892, leaving a five-year unexpired term, which was filled by the Board.

MEMBERS STATE BOARD OF HEALTH—Continued

Name	Address	Appointed by	Term
George G. Thomas, M.D., President	Wilmington	State Society	1899 to 1901
S. Westray Battle, M.D.	Asheville	State Society	1899 to 1901
H. W. Lewis, M.D.	Jackson	State Society	1899 to 1901
H. H. Dodson, M.D.	Milton	State Society	1899 to 1901
R. H. Lewis, M.D., Secretary	Raleigh	Gov. C. B. Aycock	1901 to 1907
W. P. Ivey, M.D.	Lenoir	Gov. C. B. Aycock	1901 to 1907
George G. Thomas, M.D., President	Wilmington	Gov. C. B. Aycock	1901 to 1905
Francis Duffy, M.D.	New Bern	Gov. C. B. Aycock	1901 to 1905
J. L. Ludlow, Civil Engineer	Winston	Gov. C. B. Aycock	1901 to 1905
S. Westray Battle, M.D.	Asheville	State Society	1901 to 1907
H. W. Lewis, M.D.	Jackson	State Society	1901 to 1907
W. H. Whitehead, M.D.	Rocky Mount	State Society	1901 to 1905
J. L. Nicholson, M.D.	Richlands	State Society	1901 to 1905
J. L. Ludlow, Civil Engineer	Winston	Gov. C. B. Aycock	1903 to 1909
J. Howell Way, M.D.	Waynesville	Gov. R. B. Glenn	1905 to 1911
W. O. Spencer, M.D.	Winston	Gov. R. B. Glenn	1905 to 1911
George G. Thomas, M.D., President	Wilmington	State Society	1905 to 1911
Thomas E. Anderson, M.D.	Statesville	State Society	1905 to 1911
R. H. Lewis, M.D.	Raleigh	Gov. R. B. Glenn	1907 to 1913
E. C. Register, M.D.	Charlotte	Gov. R. B. Glenn	1907 to 1913
David T. Tayloe, M.D.	Washington	State Society	1907 to 1909
James A. Burroughs, M.D.[1]	Asheville	State Society	1907 to 1913
J. E. Ashcraft, M.D.	Monroe	State Board of Health	1909 to 1913
J. L. Ludlow, Civil Engineer	Winston-Salem	Gov. W. W. Kitchin	1909 to 1913
J. Howell Way, M.D., President	Waynesville	Gov. W. W. Kitchin	1911 to 1917
W. O. Spencer, M.D.	Winston-Salem	Gov. W. W. Kitchin	1911 to 1917
Thomas E. Anderson, M.D.	Statesville	State Society	1911 to 1917
Charles O'H. Laughinghouse, M.D.	Greenville	State Society	1911 to 1917
R. H. Lewis, M.D.	Raleigh	Gov. Locke Craig	1913 to 1919
Edw. J. Wood, M.D.	Wilmington	Gov. Locke Craig	1913 to 1919
A. A. Kent, M.D.[2]	Lenoir	State Society	1913 to 1915
Cyrus Thompson, M.D.	Jacksonville	State Society	1913 to 1919
Fletcher R. Harris, M.D.	Henderson	State Board of Health	1913 to 1919
J. L. Ludlow, Civil Engineer	Winston-Salem	Gov. Locke Craig	1915 to 1921
J. Howell Way, M.D., President	Waynesville	Gov. T. W. Bickett	1917 to 1923
E. C. Register, M.D.[1]	Charlotte	Gov. T. W. Bickett	1917 to 1923
Thomas E. Anderson, M.D.	Statesville	State Society	1917 to 1923
Charles O'H. Laughinghouse, M.D.	Greenville	State Society	1917 to 1923
Fletcher R. Harris, M.D.[3]	Henderson	State Society	1919 to 1923
A. J. Crowell, M.D.	Charlotte	Gov. T. W. Bickett	1919 to 1923
Chas. E. Waddell, C.E.[4]	Asheville	Gov. Cameron Morrison	1921 to 1923
Cyrus Thompson, M.D.	Jacksonville	State Society	1919 to 1925
R. H. Lewis, M.D.	Raleigh	Gov. T. W. Bickett	1919 to 1925
E. J. Tucker, D.D.S.	Roxboro	Gov. T. W. Bickett	1923 to 1925
J. Howell Way, M.D., President	Waynesville	Gov. Cameron Morrison	1923 to 1929
A. J. Crowell, M.D.	Charlotte	Gov. Cameron Morrison	1923 to 1929
James P. Stowe, Ph.G.	Charlotte	Gov. Cameron Morrison	1923 to 1927
D. A. Stanton, M.D.	High Point	State Board of Health	1923 to 1925
Thomas E. Anderson, M.D.	Statesville	State Society	1923 to 1929
Charles O'H. Laughinghouse, M.D.[5]	Greenville	State Society	1923 to 1926
Cyrus Thompson, M.D.	Jacksonville	State Society	1925 to 1931
D. A. Stanton, M.D.	High Point	State Society	1925 to 1931
R. H. Lewis, M.D.[1]	Raleigh	Gov. A. W. McLean	1925 to 1931
E. J. Tucker, D.D.S.	Roxboro	Gov. A. W. McLean	1925 to 1931
W. S. Rankin, M.D.[4]	Charlotte	State Board of Health	1926 to 1927
L. E. McDaniel	Jackson	State Board of Health	1927 to 1929

[1]Died leaving unexpired term.
[2]Resigned to become member of General Assembly.
[3]Resigned to become Health Officer Vance County.
[4]Resigned.
[5]Resigned to become Secretary of State Board of Health.

STATE BOARD OF EXAMINERS FOR NURSES

Miss E. A. Kelly, President ..... Fayetteville
Mrs. Z. V. Conyers, Secretary and Treasurer ..... Greensboro
Miss Lula West ..... Mount Airy
Dr. Oren Moore* (from State Medical Society) ..... Charlotte
Dr. R. Duval Jones (from State Hospital Association) ..... New Bern

*Elected in 1925 to serve three years.

STATUS OF SOCIETY MEMBERSHIP BY COUNTIES FOR YEARS 1913-1927.

County	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927
Alamance-Caswell *a*	11	13	9	10	12	10	15	27	27	31	27	27	25	27	30
Alexander *b*															
Alleghany			2	2							1				
Anson	8	7				1	3	2	1	2	12	12	11	10	6
Ashe					11	15	8	7	5	9	8	6	10	6	8
Avery		8	7	9	9	7	6	4	5	4	5	5	5	5	6
Beanfort	14	14	14	14	10	11	10	14	12	14	17	14	17	17	17
Bertie	13	3	3	3	3	5	5	10	9	12	10	9	9	8	8
Bladen	5	7	7	6	9	8	9	8	7	7	4	3	8	7	8
Brunswick	5	4	5			2	2	2	1	1	1	1	1	1	1
Buncombe	69	68	70	71	74	76	81	83	92	96	99	105	97	102	118
Burke	13	15	17	17	16	17	6	11	12	11	15	13	14	11	11
Cabarrus	19	22	23	25	20	22	19	20	19	21	23	19	21	21	22
Caldwell	12	12	11	7	9	13	12	10	10	12	12	10	11	14	15
Camden *c*															
Carteret	6	7	7	9	7	4	7	9	9	8	12	10	10	12	12
Caswell *d*	1	1	1	1	1	1	3	2	2	1	1	1	2		
Catawba			15	13	18		5	18	16	22	20	19	16	16	21
Chatham	14	15	12	11	11	11	7	10	11	6	7	9	9	7	9
Cherokee	8	7	10	9	11	10	6	10	10	10	10	9	10	9	8
Chowan-Perquimans	8	9	7	4	3		6	8	7	6	7	8	5	9	10
Clay *e*															
Cleveland	15	16	13	13	16	16	17	19	16	19	18	18	17	19	20
Columbus	12	14	9	11	7	1	6	10	8	9	14	11	12	14	15
Craven	18	15	11	8	11	7	7	6	6	8	10	12	14	16	17
Cumberland	23	22	24	19	17	16	15	20	24	23	22	32	31	28	29
Currituck	4	6	7	6	6	1	5	5	5	5	4	4	4	4	3
Dare *f*															
Davidson	13	17	13	9	20	20	19	18	16	18	18	22	20	19	19
Davie				6	5	4	4	4	4	4	6	4	5	4	5
Duplin	9	7	4	7	10	9	9	10	12	11	12	12	13	13	13
Durham-Orange	32	38	40	41	44	35	33	45	40	43	43	47	53	60	64
Edgecombe	11	13	13	13	10	10	7	15	15	15	12	10	11	12	12
Forsyth	32	37	39	42	45	37	37	57	62	60	59	62	63	64	66
Franklin	10	10	12	11	10	11	11	12	10	12	12	12	12	12	10
Gaston	30	27	26	25	27	27	26	35	38	39	40	40	39	40	38
Gates							1				1	1	1		
Graham															
Granville	12	14	11	16	16	14	14	15	14	14	12	13	13	12	12
Greene	5	5	5	6	5	2	5	6	7	7	5	6	5	5	5
Guilford	59	62	71	66	68	67	72	77	78	80	87	93	107	112	119
Halifax	11	11	7	15	8	1	7	28	24	24	18	21	20	16	14
Harnett	17	16	17	15	17	15	14	16	15	16	15	15	13	12	16
Haywood	13	15	11	11	11	9	9	11	10	12	13	13	14	14	13
Henderson-Polk *g*	11	14	14	15	15	11	13	15	13	13	13	13	14	17	19
Hertford	8	10	4	1	5	10	10	10	10	10	10	10	8	8	7
Hoke					10	11	10	10	8	6	8	9	11	10	11
Hyde	7	7				1	2	1	1	2	1	2	1	1	1
Iredell-Alexander	9	14	16	9	20	11	11	21	18	20	19	20	26	29	34
Jackson	2	3	5	2	5	2	5	5	6	6	6	8	7	7	6
Johnston	18	19	21	19	22	16	24	22	23	26	25	25	24	28	24
Jones										1	2	1	4	4	3
Lee	7	8	7	8	8	6	8	8	8	10	10	11	13	13	13
Lenoir	9	12	14	15	16	15	17	22	19	20	17	20	18	20	22
Lincoln	12	13	14	11	9	11	15	16	14	13	14	16	11	11	12
Macon-Clay	4	4	5	5	4	6	6	6	7	7	7	7	6	8	8
Madison	7	8	11	9	10		11	11	12	8	11	11	11	11	5
Martin	13	14	14	15	17	12	11	16	14	12	13	10	10	10	10
McDowell	6	7	7	7	8	7	6	6	5	5	6	7	8	7	8
Mecklenburg	63	69	71	74	63	49	97	104	107	110	115	109	121	117	104
Mitchell-Watauga	4	2	2	2	1		4	5	8	10	10	7	7	8	7
Montgomery	8	6	10	9	9	8	6	8	11	10	9	9	8	9	9
Moore	13	16	15	18	10	15	16	16	17	21	20	20	19	21	17
Nash		19	18	26	27	21	26	25	26	30	30	33	34	32	31
New Hanover	31	28	33	41	30	29	38	40	46	51	46	44	42	40	41
Northampton	12	12	11	10	14	11	13	10	11	11	10	10	10	11	9
Onslow	12	10	8	9	11	7	9	8	7	7	5	6	6	5	5
Orange *h*	8								6						
Pamlico	5	5	5	5	5	4	4	5	6	5	5	4	5	5	5
Pasquotank-Camden-Dare	13	15	15	17	19	16	15	16	11	19	18	17	18	19	13
Pender	2					4	3	1	1	2	2	1	1	1	1
Perquimans *i*															
Person	11	8	11	13	12		12	10	11	10	10	10	8	7	7
Pitt	9	5	15	9	14	5	18	24	19	24	23	24	26	24	26
Polk *j*														5	6
Randolph	7	12	14	11	13	11	12	13	15	14	14	13	14	12	10

STATUS OF MEMBERSHIP BY COUNTIES—(Continued)

County	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927
Richmond	.....	10	13	13	14	11	13	12	14	13	14	16	19	18	18
Robeson	35	24	16	22	16	8	31	35	34	33	27	29	30	31	28
Rockingham	18	19	17	10	4	15	16	20	23	25	21	23	26	23	24
Rowan	23	26	22	25	23	22	24	28	31	32	32	36	40	40	40
Rutherford	19	20	19	21	14	17	18	20	12	18	22	21	21	22	24
Sampson	12	14	14	18	15	10	11	13	14	12	13	17	15	14	13
Scotland	11	12	12	12	13	10	9	10	12	12	12	12	12	12	12
Stanly	11	13	14	9	14	11	11	15	12	11	12	15	14	13	15
Stokes	7	12	13	12	10	5	5	10	6	12	9	10	10	5	7
Surry	19	21	19	18	23	24	27	28	25	25	24	26	22	17	20
Swain	.....	.....	.....	.....	6	7	2	3	1	4	3	1	1	1	.....
Transylvania	6	7	6	7	5	.....	1	1	1	5	6	4	8	4	5
Tyrrell *k*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Union	17	16	16	12	13	15	14	16	17	17	18	18	19	19	16
Vance	11	10	11	13	10	4	5	11	11	10	10	12	11	12	11
Wake	41	53	57	62	70	56	81	68	73	76	85	73	78	79	78
Warren	5	5	8	7	7	6	3	8	8	7	7	6	6	6	6
Washington-Tyrrell	.....	.....	.....	.....	.....	.....	.....	.....	10	9	9	9	8	8	6
Watauga *l*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wayne	19	13	7	17	19	18	27	28	24	33	32	29	32	34	32
Wilkes	9	8	7	6	9	8	10	10	11	10	10	10	10	9	14
Wilson	17	24	22	22	24	21	25	29	31	28	31	31	32	34	34
Yadkin	7	7	6	.....	.....	.....	10	2	5	4	3	2	3	2	2
Yancey	.....	.....	.....	.....	.....	.....	3	3	1	1	1	1	1	2	7
Totals	1133	1220	1221	1228	1271	1087	1306	1497	1491	1571	1592	1606	1657	1666	1691

a The figures for 1926 are for Alamance-Caswell; for the other years, for Alamance only; *b* See Iredell-Alexander; *c* See Pasquotank-Camden-Dare; *d* For 1926, see Alamance-Caswell; *e* See Macon-Clay; *f* See Pasquotank-Camden-Dare; *g* The figures for 1926 are for Henderson only; for the other years, for Henderson-Polk; *h* See Durham-Orange; *i* See Chowan-Perquimans; *j* See Henderson-Polk for 1912-1925; *k* See Washington-Tyrrell; *l* See Mitchell-Watauga.

HONORARY FELLOWS, MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

*Achorn, John W. ..... Pinebluff
Adams, M. R. ..... Statesville
Alexander, Annie L. ..... Charlotte
*Alston, B. P. ..... Epsom
Ambler, C. P. ..... Asheville
Anderson, Albert ..... Raleigh
Anderson, Thos. Eli ..... Statesville
*Archey, L. M. ..... Concord
*Asbury, F. E. ..... Asheboro
*Attmore, Geo. S. ..... Stonewall
*Bahnson, H. T. ..... Winston-Salem
Baker, J. M. ..... Tarboro
*Barrier, P. A. ..... Mt. Pleasant
Battle, J. T. J. ..... Greensboro
*Battle, Kemp P. ..... Raleigh
Battle, S. W. ..... Charlotte
Beall, Wm. P. ..... Greensboro
*Bellamy, W. J. H. ..... Wilmington
Boddie, N. P. ..... Durham
*Bolton, Mahlon ..... Rich Square
*Booth, Samuel D. ..... Oxford
Brown, G. A. ..... Mt. Ulla
Brown, J. S. ..... Hendersonville
Brownson, W. C. ..... Asheville
*Bulluck, D. W. ..... Wilmington
Burrus, John T. ..... High Point
Bynum, John ..... Winston-Salem
*Caldwell, D. G. ..... Concord
*Cheatham, Archibald ..... Durham
*Clark, G. L. ..... Clarkton
Council, J. B. ..... Salisbury
*Covington, J. M. ..... Wadesboro
Cox, E. L. ..... Jacksonville
*Croom, J. D. ..... Maxton
Crowell, A. J. ..... Charlotte
Crowell, L. A. ..... Lincolnton
Daligny, Charles ..... Troy
Dalton, David N. ..... Winston-Salem
Davidson, John E. S. ..... Charlotte
DeArmon, J. McC. ..... Charlotte
*Denny, Wm. W. ..... Pink Hill
Dillard, Richard, Jr. ..... Edenton
*Dodson, H. H. ..... Greensboro
*Duffy, Charles ..... New Bern
*Duffy, Francis ..... New Bern
Edgerton, Jas. L. ..... Hendersonville
*Edwards, G. C. ..... Hookerton
Edwards, J. D. ..... Siler City
Ellis, R. C. ..... Shelby
*Faison, I. W. ..... Charlotte
*Faison, Wm. W. ..... Goldsboro
*Fletcher, M. H. ..... Asheville
Flippin, Samuel T. ..... Siloam
*Fox, M. F. ..... Guilford College
*Freeman, Richard A. ..... Burlington
Galloway, W. C. ..... Wilmington
Gibbon, Robert L. ..... Charlotte
*Gilmer, Chas. S. ..... Greensboro, R. 6
Goley, Wm. R. ..... Graham
*Goodman, E. G. ..... Lanvale
Goodwin, A. W. ..... Raleigh
Gove, Anna M. ..... Greensboro
Grady, James C. ..... Kenly
*Graham, Joseph ..... Charlotte
Graham, Wm. A. ..... Charlotte
*Griffin, J. A. ..... Clayton
*Hall, Wright ..... Wilmington
Halsey, B. F. ..... Roper
*Hargrove, R. H. ..... Robersonville
Harris, F. R. ..... Henderson
*Harris, I. A. ..... Weaverville
Harriss, A. H. ..... Wilmington
Hays, Benj. K. ..... Fort Lyon, Colo. (Granville Co.)
*Haywood, F. J. ..... Raleigh
Haywood, Hubert, Sr. ..... Raleigh
*Hicks, Wm. N. ..... Durham
Highsmith, J. F. ..... Fayetteville
*Hill, L. H. ..... Germantown
Houck, Albert F. ..... Lenoir
*Hudson, Wm. L. ..... Dunn
*Hughes, Francis W. ..... New Bern
Hunter, L. W. ..... Charlotte
Ingram, Chas. B. ..... Mt. Gilead
Irwin, J. R. ..... Charlotte
Jenkins, Chas. L. ..... Raleigh
Jewett, Robert D. ..... Wilmington
Johnson, N. M. ..... Durham
Jones, A. G. ..... Walnut Cove
Jordan, T. M. ..... Raleigh
Julian, Charles A. ..... Thomasville
Kent, Alfred A. ..... Winter Park, Fla.
*Knight, J. B. H. ..... Williamston
Knight, Wm. P. ..... Greensboro
Knox, A. W. ..... Raleigh
Laughinghouse, Chas. O'H., Greenville

*Deceased.

*Leggett, Kenelm ..... Hobgood
Lewis, Geo. W. ..... Wilson
Lewis, H. W. ..... Jackson
*Lewis, R. H. ..... Raleigh
Linville, A. Y. ..... Winston-Salem
*Long, Benj. L. ..... Hamilton
*Long, Geo. W. ..... Graham
Long, H. F. ..... Statesville
*Long, J. W. ..... Greensboro
*Love, W. J. ..... Wilmington
*McDonald, A. D. ..... Wilmington
McGeachy, R. S. ..... Kinston
McGee, J. W. ..... Raleigh
*McKay, A. M. ..... Summerville
*McKay, John A. ..... Buies Creek
*McKee, James ..... Raleigh
McKenzie, W. W. ..... Salisbury
McLaughlin, J. E. ..... Statesville
McMillan, Benj. F. ..... Red Springs
*McMillan, J. D. ..... Lumberton
*McMillan, J. L. ..... Red Springs
McMillan, W. D. ..... Wilmington
McNeill, J. W. ..... Fayetteville
*McNeill, Wm. M. ..... Buies Creek
Manning, J. M. ..... Durham
*Miller, J. F. ..... Goldsboro
Minor, Chas. L. ..... Asheville
Misenheimer, C. A. ..... Charlotte
*Misenheimer, Theo. F. ..... Morven
*Monroe, W. A. ..... Sanford
Montgomery, John C. ..... Charlotte
Moore, C. E. ..... Wilson
Moore, Edwin G. ..... Elm City
Moseley, Chas. W. ..... Greensboro
Munroe, J. P. ..... Charlotte
Nelson, R. J. ..... Robersonville
*Nicholson, J. L. ..... Richland
Nicholson, P. A. ..... Washington
Nicholson, Sam T. ..... Washington
Noble, R. J. ..... Selma
Parrott, J. M. ..... Kinston
*Pate, Wm. T. ..... Gibson
Pemberton, Wm. D. ..... Concord
*Perry, M. P. ..... Macon
Pfohl, Samuel F. ..... Winston-Salem
*Pharr, T. F. ..... Concord
*Pharr, Wm. W. ..... Charlotte
*Phillips, Matthew D. ..... Dalton
*Picot, L. J. ..... Littleton
Pressly, G. W. ..... Charlotte
*Prince, D. M. ..... Laurinburg
*Register, Edw. C. ..... Charlotte
Reynolds, C. V. ..... Asheville
*Ritter, F. W. ..... Moyock
Rodman, J. C. ..... Washington
Royster, H. A. ..... Raleigh
Royster, W. I. ..... Raleigh
Sawyer, C. J. ..... Windsor
Schonwald, J. T. ..... Wilmington
*Shaffner, J. F., Sr. ..... Winston-Salem
Shamburger, J. B. ..... Star
Sikes, G. T. ..... Creedmoor
Smith, J. B. ..... Pilot Mountain
Smith, R. A. ..... Goldsboro
Snipes, E. P. ..... Jonesboro
Spainhour, Ellis H. ..... Winston-Salem
*Speight, R. H., Sr. ..... Whitakers
Spencer, W. O. ..... Winston-Salem
Stamps, Thos. ..... Lumber Bridge
Stanton, D. A. ..... High Point
*Stevens, J. A. ..... Clinton
Stevens, M. L. ..... Asheville
Strickland, Edw. F. ..... Winston-Salem
Strong, Chas. Moore ..... Charlotte
Summerell, E. M. ..... China Grove
Summers, Chas. L. ..... Baltimore, Md. (Forsyth Co.)
Tayloe, D. T., Sr. ..... Washington
*Taylor, I. M. ..... Morganton
Tennent, G. S. ..... Asheville
*Thomas, G. G. ..... Wilmington
Trantham, H. T. ..... Salisbury
*Tull, Henry ..... Kinston
Van Poole, C. M. ..... Salisbury
Vestal, W. J. ..... Lexington
*Von Ruck, Karl ..... Asheville
Ward, W. H. ..... Plymouth
Way, J. Howell ..... Waynesville
Weaver, H. B. ..... Asheville
Wharton, L. D. ..... Smithfield
*Whitaker, R. A. ..... Kinston
White, J. W. ..... Wilkesboro
*Whitehead, John ..... Salisbury
*Whitehead, W. H. ..... Rocky Mount
Whitfield, Wm. Cobb ..... Grifton
Whittington, W. P. ..... Asheville
Williams, John D. ..... Guilford Station
*Williams, J. H. ..... Asheville
Wilson, A. R. ..... Greensboro
*Young, R. S. ..... Concord

*Deceased.

(NOTE: Members having paid dues for thirty years become Honorary Fellows.)

HONORARY MEMBERS, MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

*L. McL. Tiffany	Baltimore, Md.
W. W. Keen	Philadelphia, Pa.
J. Allison Hodges	Richmond, Va.
*R. L. Payne	Norfolk, Va.
*J. N. McCormack	Bowling Green, Ky.
R. L. Payne, Jr.	Norfolk, Va.
J. L. Ludlow, C. E.	Winston-Salem
Paul V. Anderson	Richmond, Va.
Stuart McGuire	Richmond, Va.
William J. Mayo	Rochester, Minn.
William Seaman Bainbridge	New York, N. Y.
William Sharpe	New York, N. Y.
William McKim Marriott	St. Louis, Mo.

*Deceased.

OFFICERS, 1926-1927

President—Dr. John Q. Myers	Charlotte
First Vice-President—Dr. J. W. Carroll	Wallace
Second Vice-President—Dr. A. Y. Linville	Winston-Salem
Third Vice-President—Dr. C. H. Cocke	Asheville
Secretary-Treasurer (1924-1927)—Dr. L. B. McBrayer	Southern Pines

OFFICERS, 1927-1928

President—Dr. John T. Burrus	High Point
First Vice-President—Dr. G. H. Macon	Warrenton
Second Vice-President—Dr. R. F. Leinbach	Charlotte
Third Vice-President—Dr. W. R. Griffin	Asheville
Secretary-Treasurer—Dr. L. B. McBrayer *(1927-1930)*	Southern Pines

COUNCILORS, 1925-1928

First District—Dr. H. D. Walker	Elizabeth City
Second District—Dr. Grady G. Dixon	Ayden
Third District—Dr. E. J. Wood	Wilmington
Fourth District—Dr. J. C. Grady	Kenly
Fifth District—Dr. J. D. Highsmith	Fayetteville
Sixth District—Dr. V. M. Hicks	Raleigh
Seventh District—Dr. T. C. Bost	Charlotte
Eighth District—Dr. F. R. Taylor	High Point
Ninth District—Dr. M. R. Adams	Statesville
Tenth District—J. F. Abel	Waynesville

CHAIRMEN OF SECTIONS, 1928

Public Health and Education—Dr. C. C. Hudson	Greensboro
Surgery—Dr. T. C. Bost	Charlotte
Eye, Ear, Nose and Throat—Dr. S. D. McPherson	Durham
Gynecology and Obstetrics—Dr. J. S. Brewer	Roseboro
Pediatrics—Dr. Marion Y. Keith	Greensboro
Practice of Medicine—Dr. R. L. Felts	Durham

Chemistry, Materia Medica and Therapeutics—Dr. Carl P. Parker ..... Seaboard
Medical Veterans of the World War and Medical Officers Reserve Corps—Dr. J. B. Bullitt ..... Chapel Hill

DELEGATES

To American Medical Association

Dr. W. D. James, 1926-1927 ..... Hamlet
Dr. M. L. Stevens, 1926-1927 ..... Asheville
Dr. J. G. Murphy, 1927-1928 ..... Wilmington

Alternates

Dr. A. J. Crowell ..... Charlotte
Dr. G. H. Macon ..... Warrenton
Dr. E. S. Boice ..... Rocky Mount

DELEGATES

To the Medical Society of Virginia

Dr. L. S. Booker ..... Durham
Dr. Henry W. Lewis ..... Jackson
Dr. L. W. Elias ..... Asheville
Dr. H. L. Brockman ..... High Point

To the South Carolina Medical Society

Dr. R. L. Pittman ..... Fayetteville
Dr. E. R. Hardin ..... Lumberton
Dr. R. F. Ferguson ..... Charlotte
Dr. Guy E. Dixon ..... Hendersonville

COMMITTEES

Finance

(To be appointed)

Committee on Obituaries

Dr. E. G. Moore, *Chairman* ..... Elm City
Dr. C. M. Van Poole ..... Salisbury
Dr. C. A. Julian ..... Greensboro

Memorial for the North Carolina Physicians Who Died in the World War

Dr. J. P. Munroe, *Chairman* ..... Charlotte
Dr. A. J. Crowell ..... Charlotte
Dr. L. B. McBrayer ..... Southern Pines
Dr. J. M. Parrott ..... Kinston
Dr. J. T. Burrus ..... High Point

Public Health Administration

Pres. State Board of Health, *ex-officio*—Dr. J. Howell Way, Chm., Waynesville
Pres. State Board of Medical Examiners, *ex-officio*
Dr. Walter W. Dawson, Grifton
Pres. North Carolina Hospital Asso., *ex-officio*
Dr. Charles S. Lawrence, Winston-Salem

Package Libraries for Physicians

(Appointed in 1925 to serve two years; continued)

Dr. Foy Roberson ..... Durham
Dr. J. Howell Way ..... Waynesville
Dr. Wm. deB. MacNider ..... Chapel Hill

Proposed Amendment to By-Laws

Dr. J. M. Parrott, *Chairman* ..... Kinston
Dr. C. O'H. Laughinghouse ..... Greenville
Dr. Cyrus Thompson ..... Jacksonville

Award of Moore County Medical Society Medal

Dr. W. C. Mudgett, *Chairman* ..... Southern Pines
Dr. J. M. Parrott ..... Kinston
Dr. John Q. Myers ..... Charlotte

Centralization of State Institutions

Dr. Robert L. Felts, *Chairman* ..... Durham
Dr. C. A. Woodard ..... Wilson
Dr. E. J. Wood ..... Wilmington
Dr. Foy Roberson ..... Durham
Dr. P. P. McCain ..... Sanatorium
Dr. Oscar L. Miller ..... Gastonia
Dr. W. H. Dixon ..... Kinston

Committee on Public Policy and Legislation

Dr. K. P. B. Bonner, *Chairman* ..... Morehead City
Dr. J. M. Parrott ..... Kinston
Dr. W. M. Jones ..... Greensboro

Public Health Training for Public Health Officers

Dr. G. M. Cooper, *Chairman* ..... Raleigh
Dr. S. E. Buchanan ..... Concord
Dr. R. S. McGeachy ..... Kinston

Journal and Whole-Time Secretary

Dr. H. A. Royster, *Chairman* ..... Raleigh
Dr. J. M. Northington ..... Charlotte
Dr. L. B. McBrayer ..... Southern Pines
Dr. William Allan ..... Charlotte
Dr. Paul H. Ringer ..... Asheville

Harrison Narcotic Law

Dr. Albert Anderson, *Chairman* ..... Raleigh
Dr. William M. Coppridge ..... Durham
Dr. Thomas M. Parrott ..... Kinston
Dr. J. Q. Myers ..... Charlotte
Dr. W. P. Holt ..... Erwin

Committee to Study the Standardization of Specialties

Dr. C. S. Lawrence, *Chairman* ..... Raleigh
Dr. W. M. Coppridge ..... Durham

Dr. W. S. Rankin ..... Charlotte
Dr. John Q. Myers ..... Charlotte

Committee on Arrangements

Dr. A. McNiel Blair, *Chairman* ..... Southern Pines
Place of Meeting, 1928 ..... Pinehurst
Time of Meeting, 1928 ..... April 30, May 1, 2, 3rd
Headquarters ..... Carolina Hotel

PROGRAM

GENERAL SESSIONS

First Session—Opening Exercises, Tuesday, April 19th, 9:00 a.m., Room "C," Washington Duke, Dr. W. M. Coppridge, Chairman Committee on Arrangements, presiding:

Invocation: Dr. W. W. Peele, Pastor Trinity Methodist Church, Durham.

Address of Welcome: Dr. J. M. Manning, Mayor of Durham.

Response to the Address of Welcome: Dr. Oren Moore, Charlotte.

President's Address: Dr. John Q. Myers, Charlotte.

Announcements.

Second Session—Tuesday, April 19th, 8:30 p.m., City Auditorium, Durham.

Address: Honorable Julian Miller, Editor *Charlotte News*, Charlotte.

"Bronchoscopic and Esophagoscopic Cases of General Medical and Surgical Interest" (lantern slide and moving picture demonstration): Dr. Gabriel Tucker, Chevalier Jackson Clinic, Philadelphia.

Address: Dr. Wilburt C. Davison, Dean Duke University Medical School, Durham.

Dr. Davison will be presented by Dr. J. Howell Way, of Waynesville, a member of the Board of Trustees of Duke University.

Third Session—Wednesday, April 20th, 8:30 p.m., Room "A," Washington Duke.

Report of Obituary Committee.

Report of Board of Medical Examiners.

Report from House of Delegates.

Installation of Officers.

Etc., etc.

HOUSE OF DELEGATES

Monday, April 18th, 8:00 p.m., Room "A," Washington Duke.

Wednesday, April 20th, 8:00 p.m., Room "A," Washington Duke.

SECTION MEETINGS

SECTION ON MEDICAL VETERANS OF THE WORLD WAR AND MEDICAL OFFICERS RESERVE CORPS

TUESDAY, APRIL 19, 10:30 A. M.

ROOM B, WASHINGTON DUKE HOTEL

Dr. C. S. Lawrence, Chairman, Winston-Salem.

1. Chairman's Address, Great American Army Surgeons: Lt. Col. C. S. Lawrence, Winston-Salem.

2. The Camp Hospital During the World War: Col. J. T. Burrus, High Point.

3. My Impressions of a Summer Training Camp: Capt. J. E. Kerr, Winston-Salem.

SECTION ON PUBLIC HEALTH AND EDUCATION

TUESDAY, APRIL 19TH, 10:30 A. M.

ROOM C, WASHINGTON DUKE HOTEL

Dr. F. M. Davis, Chairman, Canton.

1. Chairman's Address: The Present Status and Future Program of the Public Health Movement: Dr. F. M. Davis, Canton.

Discussed by Dr. Chas. O'H. Laughinghouse, State Health Officer, Raleigh.

2. Guilford County's Program for Periodical Health Examinations: Dr. C. C. Hudson, Health Officer, Greensboro.

3. Heart Disease and Its Prevention: Dr. Thompson Frazer, Asheville.

4. The Social Misfits as Seen by the Alienist: Dr. L. G. Beall, Black Mountain.

5. Crime as a Medical Problem: Dr. Jas. K. Hall, Richmond, Va.

Discussed by the Honorable W. M. Hendren, Winston-Salem and Dr. H. W. Odum, University of N. C., Chapel Hill.

6. Lecture and Clinic: Dr. C. Ward Crampton, New York City.

NOTE: The Section on Public Health and Education will meet with the North Carolina Public Health Association Monday night to hear Dr. C. Ward Crampton of New York City.

JOINT MEETING OF THE SECTION ON PEDIATRICS AND THE SECTION ON EYE, EAR, NOSE, AND THROAT

TUESDAY, APRIL 19TH, 10:30 A. M.

ROOM A, WASHINGTON DUKE HOTEL

Dr. Spencer P. Bass, Chairman Pediatrics.

Dr. Jno. B. Wright, Chairman Eye, Ear, Nose, and Throat

1. Obscure Mastoiditis in Infants and Young Children: Dr. D. B. Sloan, Wilmington.

2. Etiology and Treatment of Acute Otitis Media: Dr. H. C. Wolfe, Greensboro.

3. The General Manifestation of Para Nasal Sinusitis in Children: Dr. Marion Y. Keith, Greensboro.

General Discussion Opened by Dr. J. Buren Sidbury, Wilmington.

4. Presentation of Cases by Dr. B. U. Brooks, Durham, at Watts Hospital.

SECTION ON PEDIATRICS

TUESDAY, APRIL 19TH, 2:00 P. M.

ROOM B, WASHINGTON DUKE HOTEL

Dr. Spencer P. Bass, Tarboro.

1. Chairman's Address, Chorea and Rheumatic Disease: Dr. Spencer P. Bass, Tarboro.

2. Ultra-violet Radiation in Pediatrics: Dr. B. W. Roberts, Durham.

Discussion opened by Dr. J. F. Foster, Sanford.

3. Mastoiditis in Young Children: Dr. Tom Watson, Wilmington.

Discussion opened by Dr. B. U. Brooks, Durham.

4. Congenital Cyst of the Neck (illustrated): Dr. R. L. Payne, Norfolk, Va.

Discussion opened by Dr. Chas. F. Strosnider, Goldsboro.

5. Appendicitis in Children: Dr. Albert S. Root, Raleigh.

Discussion opened by Dr. R. L. Payne, Norfolk, Va.

6. Intracranial Hemorrhage in the Newborn: Dr. John C. Tayloe, Washington.

Discussion opened by Dr. W. C. Verdery, Fayetteville.

SECTION ON EYE, EAR, NOSE, AND THROAT

TUESDAY, APRIL 19TH, 2:00 P. M.

ROOM A. WASHINGTON DUKE HOTEL

Dr. Jno. B. Wright, Chairman, Raleigh.

1. Chairman's Address: Dr. Jno. B. Wright, Raleigh.

2. Laryngeal Abscess (lantern slides): Dr. Gabriel Tucker, Chevalier Jackson Clinic, Philadelphia.

3. Evolution of the Human Face; Its Influences on the Morphology, Malformations, and Diseases in the Realm of Rhinology, Laryngology, and Dentistry (lantern slides): Dr. H. H. Briggs, Asheville.

Discussion by Dr. R. L. Beam, Lumberton; Dr. O. C. Daniels, Oriental.

4. Anaesthesia in Eye, Ear, Nose, and Throat Surgery: Dr. L. L. Simmons, Greensboro.

Discussion by Dr. M. S. Broun, Asheville; Dr. Frank Sabiston, Kinston.

5. Headaches from the standpoint of Eye, Ear, Nose and Throat Specialists: Dr. M. A. Lackey, Mooresville.

Discussion by Dr. C. W. Banner, Greensboro; Dr. J. W. MacConnell, Davidson.

6. Pharyngeal Adhesions: Dr. A. J. Ellington, Burlington.

Discussion by Dr. A. M. Whisnant, Charlotte; Dr. S. D. McPherson, Durham.

7. Traumatic Pulsating Exophthalmus: Dr. Henry L. Sloan, Charlotte.

Discussion by Dr. Frank C. Smith, Durham; Dr. M. H. Brawley, Salisbury.

8. Elliott's Operation (Sclerocornea Trephining): Dr. Jas. M. Parrott, Kinston.

Discussion by Dr. J. G. Murphy, Wilmington; Dr. J. M. Lilly, Fayetteville.

9. Frontal and Ethmoid Sinusitis with Orbital Complications: Dr. F. E. Motley, Charlotte. Discussed by Dr. J. P. Matheson, Charlotte, Dr. V. M. Hicks, Raleigh.

SECTION ON CHEMISTRY, MATERIA MEDICA, AND THERAPEUTICS

TUESDAY, APRIL 20TH, 2:00 P. M.

ROOM C, WASHINGTON DUKE HOTEL

Dr. Ben H. Hackney, Chairman, Lucama.

1. Chairman's Address, Treatment of Simple Goiter: Dr. Ben H. Hackney, Lucama.

2. The State's Problem with the Epileptic; What It Has Done and What It Should Do for Them: Dr. Thos. M. Jordan, Raleigh.

3. Some Notes on Alkalosis: Dr. Spencer P. Bass, Tarboro.

4. Glucose Solution in the Treatment of Neisserian Infections: Dr. W. N. Coppridge, Durham.

5. A Re-valuation of the Early Manifestations of Pulmonary Tuberculosis: Dr. R. D. McMillan, Red Springs.

6. Basal Metabolism: Dr. Hubert B. Haywood, Raleigh.

SECTION ON SURGERY

WEDNESDAY, APRIL 20TH, 9:00 A. M. AND 2:00 P. M.

ROOM A, WASHINGTON DUKE HOTEL

Dr. A. deT. Valk, Chairman, Winston-Salem.

1. Thyroiditis Associated with Hyperthyroidism (lantern slides): Dr. Addison G. Brenizer, Charlotte.

2. Practical Points in the Technique of Thyroidectomy: Dr. H. A. Royster, Raleigh.

3. Cholecystitis: Dr. W. L. Grimes, Winston-Salem.

4. Gall Bladder Disease and the Treatment: Dr. Foy Roberson, Durham.

5. Treatment of Perforative Appendicitis, With or Without Abscess: Dr. B. C. Willis, Rocky Mount.

6. Intestinal Obstruction Due to Meckel's Diverticulum; with Report of Two Cases: Dr. A. D. Parrott, Kinston.

7. Rambling Remarks about a Few Surgical Diseases of the Abdomen: Dr. F. W. Griffith, Asheville.

8. The Management of Acute Brain Injuries: Dr. Thos. M. Green, Wilmington.

9. Treatment of Fractures of the Spine: Dr. C. S. Lawrence, Winston-Salem.

10. The Surgical Treatment of Traumatic Aneurysm of Common Carotid Artery: Dr. J. D. Highsmith, Fayetteville.

11. Neuro-Surgical Diagnostic Methods in Intracranial Disease: Dr. Jas. C. Joyner, New York.

SECTION ON PRACTICE OF MEDICINE

WEDNESDAY, APRIL 20TH, 9:00 A. M. AND 2 P. M.

ROOM C, WASHINGTON DUKE HOTEL

Dr. W. D. Rodgers, Chairman, Warrenton.

1. Relation of Mental Diseases to the General Practitioner: Dr. Wesley Taylor, Greensboro.

Discussion by Dr. F. R. Taylor, High Point.

2. The Position of the Yeasts in Medicine: Dr. E. J. Wood, Wilmington.

Discussion by Dr. Cyrus Thompson, Jacksonville; Dr. W. T. Rainey, Fayetteville.

3. Low Blood Pressure: Dr. Wingate M. Johnson, Winston-Salem.

Discussion by Dr. John T. J. Battle, Greensboro; Dr. Carl P. Parker, Seaboard.

4. The Relation of the Endocrines to Obesity and Weight Reduction: Dr. Verne S. Caveness, Raleigh.

Discussion by Dr. G. H. Macon, Warrenton; Dr. I. H. Manning, Chapel Hill.

5. The Clinical Phase of Tuberculosis in Childhood: Dr. P. P. McCain, Dr. S. E. Lee, and Dr. P. A. Yoder, of Sanatorium.

Discussion by Dr. C. W. Armstrong, Salisbury.

6. A Roentgen Study of Childhood Tuberculosis: Dr. Jos. Shohan, Greensboro.

7. The School Tuberculosis Clinic from the Standpoint of the Health Officer: Dr. C. C. Hudson, Greensboro.

Discussion by Dr. J. L. Spruill, Jamestown.

8. The Signs and Symptoms of Gall Bladder Diseases; Analyses of One Hundred Cases: Dr. C. T. Smith, Rocky Mount.

Discussion by Dr. T. W. M. Long, Roanoke Rapids; Dr. L. H. Justice, Littleton.

9. Concerning the Treatment of Carbuncles and Other Acute Inflammations with the X-ray (lantern slides): Dr. Robert P. Noble, Raleigh.

Discussion by Dr. C. R. Young, Angier.

10. Report of a Case of Leg Ulcer, Demonstrating the Value of Physio-Therapy: Dr. James R. Alexander, Charlotte.

Discussion by Dr. William Allan and Dr. C. M. Strong of Charlotte.

11. The Inherited Predisposition to Disease: Dr. John Saliba, Elizabeth City.

Discussion by Dr. G. E. Newby, Hertford.

12. The Importance of the Recognition of Certain Brain and Spinal Cord Conditions; Case Reports: Dr. A. A. Barron, Charlotte.

Discussion by Dr. Hubert B. Haywood, Jr., Raleigh.

13. The Therapeutic Properties of the Mineral Water Resources of the State of North Carolina: Dr. Wm. E. Fitch, Buffalo Lithia Springs, Va.

SECTION ON GYNECOLOGY AND OBSTETRICS

WEDNESDAY, APRIL 20TH, 9:00 A. M.

ROOM B, WASHINGTON DUKE HOTEL

Dr. C. S. Grayson, Chairman, High Point.

1. Chairman's Address, The Obstetric Question; Its Significance: Dr. C. S. Grayson, High Point.
2. Hyperemesis Gravidarum: Dr. J. S. Brewer, Roseboro.
3. Vesicovaginal Fistulae with Report of Case: Dr. Robert T. Ferguson, Charlotte.
4. Blood Transfusion; Technique and Indications: Dr. R. B. Davis, Greensboro.
5. Our Obstetric and Gynecologic Responsibilities: Dr. Owen-Smith, High Point.

Leader of Discussion, Dr. Oren Moore, Charlotte.

6. Anaesthesia in Obstetrics; A Critical Discussion of All Present Methods, With Special Reference to the Synergistic Method (lantern slides): Dr. John Watkins, Asheville.
7. A Study of the Pelvis in Relation to Operative Delivery: Dr. Ivan Proctor, Raleigh.
8. The Use of Kielland Forceps: Dr. Robert A. Ross, Durham.

Leader of Discussion, Dr. F. N. Bowles, Durham.

CONJOINT SESSION OF THE STATE BOARD OF HEALTH AND THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

WEDNESDAY, APRIL 20TH, 12:00 NOON

ROOM C, WASHINGTON DUKE HOTEL

Dr. J. Howell Way, President State Board of Health, presiding.

MEMBERS OF THE NORTH CAROLINA STATE BOARD OF HEALTH

J. Howell Way, M.D., President, Waynesville.
Thomas E. Anderson, M.D., Statesville.
A. J. Crowell, M.D., Charlotte.
W. S. Rankin, M.D., Charlotte.
Cyrus Thompson, M.D., Jacksonville.
E. J. Tucker, D.D.S., Roxboro.
D. A. Stanton, M.D., High Point.
James P. Stowe, Ph.G., Charlotte.
John B. Wright, M.D., Raleigh.

EXECUTIVE STAFF

Chas. O'H. Laughinghouse, M.D., Secretary and State Health Officer.
Ronald B. Wilson, Assistant to the Secretary.
C. A. Shore, M.D., Director State Laboratory of Hygiene.
G. M. Cooper, M.D., Director Bureau of Health Education.
H. E. Miller, C.E., Chief of Bureau of Engineering and Inspection.
F. M. Register, M.D., Deputy State Registrar of Vital Statistics.
H. A. Taylor, M.D., Director Bureau Maternity and Infancy.
C. N. Sisk, M.D., Director Bureau of County Health Work.

ORDER OF BUSINESS

Report of Work Accomplished and Recommendations.
Discussions.
New Business.
Adjournment.

THE ASSOCIATION OF COUNTY MEDICAL SOCIETY PRESIDENTS OF NORTH CAROLINA

WEDNESDAY, APRIL 20TH, 2:00 P. M.

ROOM B. WASHINGTON DUKE HOTEL

President, Dr. R. F. Leinbach, Charlotte.
First Vice-President, Dr. J. B. Bonner, Washington.
Second Vice-President, Dr. J. T. Smith, Westfield.
Third Vice-President, Dr. W. H. Houser, Cherryville.
Secretary-Treasurer, Dr. W. W. Green, Tarboro.

WOMEN'S AUXILIARY TO THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

WEDNESDAY, APRIL 20TH, 10:00 A. M.

PARLORS Y. W. C. A.

Officers for 1927

President, Mrs. R. S. McGeachy, Kinston.
President-Elect, Mrs. Benj. J. Lawrence, Raleigh.
First Vice-President, Mrs. W. C. Mudgett, Southern Pines.
Second Vice-President, Mrs. R. E. Brooks, Burlington.
Third Vice-President, Mrs. Julian A. Moore, Wilmington.
Treasurer, Mrs. W. P. Knight, Greensboro.
Recording Secretary, Mrs. P. P. McCain, Sanatorium.
Corresponding Secretary, Mrs. W. J. Hunnicutt, Asheville.

Councilors

First District, Mrs. Isaiah Fearing, Elizabeth City.
Second District, Mrs. K. P. B. Bonner, Morehead City.
Third District, Mrs. D. R. Murchison, Wilmington.
Fourth District, Mrs. B. A. Hocutt, Clayton.
Fifth District, Mrs. A. B. Holmes, Fairmont.
Sixth District, Mrs. C. N. Sisk, Raleigh.
Seventh District, Mrs. E. B. Lattimore, Shelby.
Eighth District, Mrs. J. L. Spruill, Jamestown.
Ninth District, Mrs. C. R. Sharpe, Lexington.
Tenth District, Mrs. Guy E. Dixon, Hendersonville.

PROGRAM

Meeting called to order by president.
Invocation.
Welcome to Visitors.
Response by Mrs. Guy Dixon, Hendersonville.

Roll Call.

Minutes of Previous Meeting.

Address by Dr. L. B. McBrayer, Secretary-Treasurer State Medical Society, Southern Pines.

Report of Treasurer, Mrs. W. P. Knight, Greensboro.

Report of Councilors.

Election of Nominating Committee.

Report of Delegates to A. M. A.

Report of Nominating Committee.

Remarks by President.

Adjournment.

NORTH CAROLINA PUBLIC HEALTH ASSOCIATION

SEVENTEENTH ANNUAL SESSION

DURHAM

MONDAY, APRIL 18, 1927

ROOM C, WASHINGTON DUKE HOTEL

Papers Limited to Fifteen Minutes—Discussion to Five Minutes

E. R. Hardin, M.D., President, Lumberton.

J. H. Hamilton, M.D., Vice-President, Wilmington.

F. M. Register, M.D., Secretary, Raleigh.

PROGRAM

9:45—1:00 P. M.

1. Call to Order by the President.
2. Prayer by Dr. David H. Scanlon, Durham.
3. President's Annual Address: E. R. Hardin, M.D., Lumberton.
4. Report of Secretary: F. M. Register, M.D., Raleigh.
5. Report of Special Committees.
6. Appointment of
   (a) Committee on President's Address.
   (b) Committee on Visitors and New Members.
   (c) Committee on Resolutions.
   (d) Other committees.

7. Results of Four Thousand Schick Tests in a Rural Health Unit: J. R. Hege, M.D., Winston-Salem.

Discussion by Sidney E. Buchanan, M.D., Brevard.

8. Health Problems in a Distinctly Rural County and How to Meet Them: R. E. Broadway, M.D., Southport.

Discussion by J. E. Smith, M.D., Windsor

9. A Review of Milk Sanitation Progress in North Carolina: Malcolm Lewis, Assistant Engineer in Milk Sanitation, Raleigh.

Discussion by J. H. Epperson, M.D., Durham, and Z. P. Mitchell, M.D., Weldon.

10 Address by Dr. Chas. O'H. Laughinghouse, State Health Officer, Raleigh.

2:45 P. M.—5:00 P. M.

1. Prenatal Infant Nursing Service in Maternity and Infancy Work: Miss Draper Fultz, R.N., Raleigh

Discussion by Miss Irene Parsons, Rockingham.

2. Child Health Programs that are Bringing Excellent Results in North Carolina: Miss Theresa Dansdill, A.M., Director of Health Education, North Carolina Tuberculosis Association, Southern Pines.

Discussion by R. L. Carlton, M.D., Winston-Salem.

3. Our Mutual Obligation: E. B. Howle, M.D., D.D.S., Raleigh.

Discussion by A. H. Fleming, D.D.S., Louisburg.

4. Possibilities for the Conservation of Infant Life by a Well Organized Maternity and Infancy Unit: J. H. Epperson, M.B., Durham.

Discussion by Geo. A. Collins, M.D., Raleigh.

5. County Wide Malaria Surveys: Paul S. Carley, M.D.

Discussion by H. A. Taylor, M.D., New Bern.

7:45 P. M.—10:00 P. M.

1. Election of Officers.

2. Annual Physical Examination with Demonstration by Clinic: C. Ward Crampton, M.D., New York, N. Y.

Dr. Crampton is one of the outstanding medical men of this country. He will have something worthwhile to say to the doctors of North Carolina, especially those in general practice.

TRANSACTIONS

OF THE

SEVENTY-FOURTH ANNUAL SESSION

OF THE

MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

DURHAM, APRIL 19, 1927

GENERAL SESSIONS

The meeting was called to order at 9:00 A. M. by Dr. W. M. Coppridge, Chairman Committee on Arrangements.

Invocation by Rev. W. W. Peele, Pastor Trinity Methodist Church, Durham.

In the beginning of this Convention, Our Heavenly Father, we recognize our dependence upon Thee, and remember the fact that we can do nothing without Thy help and Thy assistance. All that we are and all that we hope to be is because of Thy goodness to us, we are fellow-workers together with Thee and when we go about our work as physicians and surgeons we feel that we are doing a Divine work because Thou art interested in life and Thou didst come into this world to give life in all its fullness. Therefore, we know that we can ask Thee to guide us in this work in which we are engaged.

May we bring to Thee the best trained intellects of which we are capable and may we strive to get out of this Convention some real help that will enable us to be more helpful in this work to which Thou hast called us. May we be compassionate always as we go in and out among those who suffer and among those who are grieved. May we have hearts big enough to take upon them a part of the suffering of others and may we have the spirit of the Doctor of old, who was not only a physician but who was a brother; who had toward all humanity a fraternal spirit of brotherhood. We ask that we may be akin to those of big hearts and big brains and may we have wills to dare to do when Thou dost give to us the ability and the information. We come to Thee, Our Father, bringing our hearts and our minds and our sympathies and our all and ask that Thou wilt continue to guide and lead us in order that we may prolong life and relieve suffering and help those who are in need. We thank Thee that we realize in Jesus Christ, who went

about doing good, healing the sick and helping the suffering, a great Brother; that in Him we have a great Physician, and we would pattern our lives according to His life.

Bless us in this Convention. May it be not only a period of real fellowship and goodwill, but a time of real study as well so that we may be better prepared to do our work. Guide us and help us and at last take us to Thyself in glory, we ask in Jesus name. Amen.

ADDRESS OF WELCOME

Mr. W. F. Carr, *Mayor Pro Tem,* Durham, North Carolina.

Mr. President, Mr. Chairman and members of the State Medical Society: I cannot express to you the pleasure that the city of Durham feels in having you as its guests, without at the same time expressing to you the disappointment that the City feels in that its chief executive, the mayor, Dr. J. M. Manning, cannot be here in person to extend to you the City's welcome. It would be eminently fitting for Dr. Manning, as present mayor—and unopposed candidate for the same office at an election being held today, to have performed this pleasing task. The good doctor sends greetings to your society and says that he hopes the next time you hold your meeting in Durham he will be able to welcome you himself. So you see that the City as well as Dr. Manning himself considers him as a fixture as mayor.

To me it has always seemed that the chief duty of an introductor or an addressor of welcome—is to say just as little as he can just as quickly as he can and sit down. This fact will be borne in mind and I will not keep you waiting very long, not as long as Bill Smith waited when he went to the hospital one time. Bill went to a colored hospital and knocked at the door and a colored nurse answered. Bill says, "I have come to see how mah friend Joe Brown is getting along." The nurse answered, "He is getting along fine, he is convalescing now." "Well" says Bill, "I will just sit here and wait till he is through." You won't have to wait that long till I am through.

I regard doctors as representing a very high type of citizenship. I believe that it is a fact that cannot be successfully controverted, that doctors represent a higher type of citizenship than any other body of men. I have always felt very close to doctors, and it is a matter of considerable pride to me that I am the son of a physician.

I believe I know something of your trials and hardships—something of your ideals—something of your sadness and disappointments. I openly affirm that doctors put forth more effort—more energy—exercise more skill with less reward or less hope of reward than any other group of men. In fact, I often wonder why doctors are doctors. Shakespeare has one of his characters say, "There is a pleasure in madness that only a madman knows," so it must be that there is something in medicine that only a medical man knows. Often I marvel at the versatility of good doctors. As in every other trade or profession, so in yours, some are good, some are downright bad and too large a proportion are indifferent. But I am talking about good doctors. Almost daily you touch every phase of life—you come in contact with

depravity, poverty, perversion, sadness, bereavement, humiliation and at each turn of the wheel you play a man's part.

Thirty years ago my father was a practising physician in this town. In looking over some of his papers I came across some correspondence between my father and Dr. William Osler, and in noting how few doctor's wives are here this morning, I am wondering if all doctors, in some respects, are not all more or less alike. It seems that in one of the letters my father had written Dr. Osler to see about getting accommodations in or near the Johns Hopkins Hospital while he was taking a special course there—and here is part of Dr. Osler's letter in reply: "You could be very comfortable just opposite the hospital and we could, I know, make you very happy. I think that a man of your kidney had better bring along his wife. You would be pretty sure to get in trouble with some of the nurses. I have just consulted Mrs. Osler and she says most emphatically, "Don't let Dr. Carr come here without his wife; he is not the sort of man to travel alone."

Yet not all the calls you have to make are of the heart wringing kind. Think of that time when the beautiful feminine character in the Merchant of Venice says, "By mine honour, which is yet mine own, I'll have that doctor for my bedfellow."

One of the nightmares of doctors is a home remedy, nevertheless permit me to be presumptious enough to prescribe one or two. If a business man comes to you with chronic constipation condemn him to a public speech. The most effective diuretic I know anything about is an address of welcome.

There is one thing about doctors that I don't like and I don't subscribe to—and I don't believe I believe, that is, that at one time doctors were barbers—as far back as Queen Elizabeth's time reference is made to Bellario, a learned doctor. He was not a barber nor the son of a barber. I believe rather that doctors were forged from God's own anvil and were sent as ministering angels to suffering mankind—yes this town is proud of your presence here, and Gentlemen the city is yours.

RESPONSE TO THE ADDRESS OF WELCOME

Dr. John Stuart Gaul, Charlotte.

Mr. Chairman; Ladies and Gentlemen: Dr. Oren Moore was to have made the response to the Address of Welcome but because of circumstances over which he had no control he is unable to be present. Now when one has tuned his heart and ear to the song of a robin and has to listen to the chirp of a sparrow, great is the disappointment and I appreciate greatly the disappointment that is yours this morning.

Gentlemen, we are happy to have the seventy-fourth Annual Meeting of our Society in your City. Your City is notable particularly for its growth which has been due largely to the efforts of your own citizens. You have produced remarkable men, men of great vision, of great accomplishments, men of great aspirations who have left their impress on society. This is already permeating the deliberations of this body. We thank you for the kind expressions of cordiality and hospitality that you have extended to us.

We also fully realize that there is growing in your community a great Institution that is of particular interest to the members of this profession. We shall in the future turn towards that Institution and toward this City and because of this hospitality and cordiality that you have extended to us we shall take an added pleasure in so doing.

THE PRESIDENT'S ADDRESS

BY

DR. JOHN Q. MYERS, Charlotte, N. C.

Mr. Chairman, Gentlemen of the North Carolina Medical Society, Distinguished Guests, Ladies and Gentlemen:

In response to the pleasing words of introduction, I must again express my sincere appreciation of the honor conferred upon me one year ago at Wrightsville Beach, when your kind partiality and confidence named me your President for this term. I am not unwise at being thus honored with your choicest gift, that it is truly the proudest distinction that can be accorded to any physician in the State of North Carolina. I am not using a mere phrase, of course, when I say that the feelings with which I bear a part in the ceremony of this day are such as I find it difficult to utter in words.

In truth, there are few spectacles more striking or affecting than that which a great historical place of education presents on a day like this. Recollections and hopes crowd upon us together. The past and the future are at once brought close to us. Our thoughts wander back to the time when this Society was organized, this being the seventy-fourth annual meeting, the twenty-third since I became a member of this body. And it is fitting and proper that we meet in Durham today, the home of Duke University, and in celebrating our first annual meeting since its organization.

We are met in a place that is shortly to become one of the world's greatest medical centers. Here in the unrestricted atmosphere of a truly great University is to be established a medical school with a physical equipment costing $4,000,000.00, with an endowment for maintenance of from $8,000,000.00 to $10,000,000.00, and with a teaching staff—if we may judge from the initial step in its organization—second to none.

With such unexcelled material and intellectual resources, the Medical Department of Duke University will formulate a program of service —of broad and deep human service—a program of service formulated not in the stifled atmosphere of the laboratory and classroom, but in the larger and more vital atmosphere of the actual conditions and needs of medical services in this section of our country.

To this end, the interests of the Medical Department of Duke University will extend far beyond the selection and matriculation of students properly qualified in character and in training, will extend beyond the conferring of the degree of Doctor of Medicine upon such students after they have undergone a thorough course in the theoretical and practical branches of medicine, will extend to and influence the location of its graduates in communities where there is not an excess of doctors, but where there is unquestionable deficit in the medical personnel of

a community; and beyond this, the interest of the Medical Department of Duke University will not be satisfied with the selection, training, and proper location of its graduates, but will reach yet further and endeavor to deal in a helpful and practical manner with post-graduate medicine, will ascertain the needs of its own graduates and the graduates of other medical schools who are practicing in North Carolina and South Carolina, and will so organize the work of its teaching staff and its hospitals as to be of direct and definite service to the practising physicians of these States.

The central and intimate relation which the Medical Department of Duke University will occupy to the Hospital Section of the Duke Endowment will make possible the development of a unique and practical plan of cooperation based upon the mutual interest of the large central hospital in Durham and the many outlying medical centers in North Carolina and South Carolina to which the Trustees of the Duke Endowment are giving assistance.

Death, who knocks with equal hand at the door of the cottage and the palace gate, has been busy at his appointed work. This has been a very unusual year, for death has claimed three of North Carolina's Medical Society Ex-Presidents and Wise Counselors: I pause and am forced to acclaim, Oh, Spirit of Dr. R. H. Lewis, the leader of Public Health activities in North Carolina! Oh, Spirit of Dr. I. W. Faison, that Dean and leader of Infant Care and Protection in North Carolina! Oh, Spirit of Dr. John Wesley Long, that Giant of Leaders of Surgeons in the South! We have lost the wise counsel and pleasant association of these gentlemen, but their works do follow them.

We can well say with Horace, of old: "Such statesmen, doctors and servants of the whole people as these, no shaft or arch need be erected to their memory, for while with us they completed a monument more lasting than brass and more sublime than the regal elevation of pyramids; which neither the wasting showers, the unavailing north wind, or innumerable succession of years, and the flight of seasons, shall be able to demolish."

It is an interesting fact that the life of our Association is almost coextensive with that era of organized medical research and advancement in all of America's greatest achievements—for that matter, the period of greatest development in both scientific and material welfare that has passed in the world's history, for a little more than seventy-five years ago, when our predecessors assembled to organize this Society in Raleigh, a few Wake County physicians and less than a half dozen others were present. They could avail themselves of no other means of transportation than those which were in use before the time of Homer. If they had occasion to traverse distances over land too great for convenient walking, they were carried or drawn by horses. If they had occasion to cross bodies of water, they used oars or sails. We have been brought to our destination today by forces of steam, electricity or gasoline—and I had an opportunity to come by airplane. The harnessing of these mighty forces for man's use has transformed not only the modes of transportation, but also the process of production of all kinds of commodities. Every phase of human life is affected by those arts which

have arisen from the applications of science. Comforts and luxuries which seventy-five years ago were beyond the reach of the most wealthy, are now available for the use of even the poor. *Sanitary* science has arrested the *massacre* of the innocent and has increased the average duration of human life, while, during the life of this Society all modern technique and discoveries have progressed and to this period belongs the greatest achievements in medical and surgical history. We always find a good exhibit of commercialized products at our State Meeting and see many of the men interested in learning something about new equipment, which is all right and good, but I desire to recommend that we also have scientific exhibits as an annual display of what is being done by our men in the State—Research reports, X-ray findings, clinical exhibition with results, pathological specimens, photographic or otherwise to make attractive what we are doing along various lines in our own home. State and by so doing stimulate our own members to do greater and more extensive work for the greatest good of all.

We are delighted to honor the Moore County Medical Society for its Trust Endowment, the proceeds of which will be used to provide a Medal to be awarded annually to the member or organization in the State for Distinctive and Original Work in Medicine. I had the pleasure of appointing the first committee to adjudge the awarding of this medal: viz., Dr. W. C. Mudgett, Dr. John Wesley Long, and Dr. William Allan.

PERIODIC HEALTH EXAMINATIONS

We have been very much interested in getting the profession of our State interested in doing Periodic Medical Examinations of the apparently healthy. Many of our doctors have been very active in this work, and I trust the majority will soon join in doing this work. Dr. H. L. Brockman is to be congratulated on calling our attention to this matter in his excellent paper which he read before our Society last year, and I am indebted to him for calling our attention to this great need in the Profession in taking the lead in this matter.

If the medical profession had stressed periodic health examinations for the past fifty years and done a systematic examination on all their patients once a year, on the patient's birthday; My! what a healthy and happy people we would have had, and the quacks, "isms" and cults would not have been known.

If the Great Medical Profession of North Carolina would get more KEENLY INTERESTED IN THE ACTIVITIES, PURPOSES AND UNDERTAKINGS OF THE STATE BOARD OF HEALTH, and learn to appreciate fully the great financial assistance the State Board of Health can give, and does give, to the individual physician in providing care and protection for the unfortunate and helpless ones and the great help they give to all in providing preventative remedies and educational propaganda spread over our State, there would be a mutual benefit accomplished that would reach every individual in the State. "I do not think it is the desire of the State Board of Health to do TONSILLECTOMIES, MAKE PERIODIC MEDICAL EXAMINATIONS, OR EVEN VACCINATE AGAINST INFECTIOUS AND

CONTAGIOUS DISEASES, but rather would be delighted to have all this work done by the MEDICAL PROFESSION, the Profession receiving adequate fees from individual patients for this service."

PERIODIC HEALTH EXAMINATIONS, stressing the idea that every body should have a careful physical examination on every birthday, will give an immense amount of remunerative work to the Profession, if the profession would undertake it. It would LENGTHEN LIFE, PREVENT DISEASE AND WOULD MAKE men, women and children receive treatment for disease. It would take more from the QUACKS AND CULTS than any other idea which the Profession could originate or put into operation.

I feel sure if this matter is brought to the Board of Health, and propaganda spread over the State by the Medical Profession, it will do more good than any one thing that has been done for the health and happiness of the people since the eradication of yellow fever, typhoid fever, malaria and smallpox. It will bring the people and the PROFESSION closer together.

"The periodic health examination movement was first officially recognized by the American Medical Association in 1922. As a result of numerous requests from both medical and lay sources for a description of methods of carrying out these examinations and results to be expected, the House of Delegates of the A. M. A. in June 1922 instructed the Council on Health and Public Instruction to prepare forms for use by physicians in making these examinations and appointed a committee to work upon further details. The full import of the movement was quickly recognized and in 1925, President W. D. Haggard promptly announced it as the major objective of his administration. As spokesman of the A. M. A., he presented the subject to many state medical societies and in practically every public address he made during his term of office. By October 1925 there was ready for distribution 'A Manual of Suggestions for the Conduct of Periodic Examinations of Apparently Healthy Persons.' It is the ardent desire of those who have faith in this movement to have a copy of this manual in the hands and minds of every physician in the United States. Its cost is twenty cents for a single copy, or fifty copies for four dollars and fifty cents, and the information therein, whether approved or not, is well worth while."

I know that in 1920, Dr. W. S. Rankin had in mind as an activity of the State Board of Health the institution of diagnostic clinics for the purpose of educating people to the idea of periodic health examinations. At this time, he sought to have these done by local physicians, popularizing the examination by propaganda from the State Board of Health, and to have those examined referred for the correction of defects to their own family physician.

It has been well established that this is the work of the general practitioner—the family physician. There has been much cry of late years concerning the passing of the family physician. We recognize now that it is but the beginning of a new era for this group of practitioners.

PUBLIC HEALTH

With North Carolina a pioneer in Public Health Work and with one of the most active and efficient Boards of Health and Public Health organizations in the country, there is yet much we can learn and much we can do. Although this feature of the work and responsibility of this society has been so often brought before us, the scope of this field of useful service is so rapidly expanding that we must keep on the run to keep up with it and direct it. There is, therefore, no needed apology for speaking of it.

Perhaps some may think that our Board of Health is old enough and has shown itself capable enough to be weaned. It may be old enough, and it is indeed very capable, but it must never, and in fact never can be, weaned from this parent organization. Perhaps it would now be more appropriate to speak of these, the Medical Society and the Board of Health as the Medical Siamese Twins of the State. Any effort to separate them would inevitably lead to disaster.

Preventive medicine at wholesale is no less a doctor's work than curative medicine at retail. Whatever pertains to the health of people in the State is a concern of the medical men. Certain phases of health work are of such nature that their execution must be state-wide or county-wide or city-wide. Where the problem is of such nature and scope that it may be efficiently handled, by one man, then perhaps it is the individual doctor's problem. Where the problem is of such nature and scope that there must be the pooling of individual efforts and a wide distribution of expense, then obviously, that problem is a Public Health problem. Many things that were once individual problems for the individual doctor have later become Public Health problems,—i.e.: Typhoid Fever, Yellow Fever, Malaria. As scientific progress carries each problem beyond the ability of the individual doctor to manage, it then becomes a community problem or a Public Health problem.

Not the least of the Public Health problems is Health Education. In this, each individual doctor has his own individual work to do, but to be effective, health education or health knowledge must be universal and it is therefore a community problem, or a Public Health problem. This particular work of the medical profession is a good illustration of the inseparability of Public Health work and private practice. The Public Health workers may carry on a campaign of health education on a broad scale, but unless this is backed up by the individual doctor in an individual way with his individual patients, such campaign loses much of its value. In a clinic, in a public meeting, or in print, one health worker may expound health principles very convincingly to many people, and then in turn each individual will later seek his own doctor in private for his personal opinion of the things thus expounded. In matters of health education, as of course, in all the other matters, there should be between the Public Health worker and the individual doctor the warmest feeling of comradeship and mutual understanding. In matters where there is an honest difference of opinion, expressions to the public by either doctor or health worker should be most guardedly careful, until such time as these two opinions can be reconciled and the

subject presented to the public by united backing. Nowhere is it more true that "A house divided against itself shall surely fall,"—for the health worker to antagonize the medical profession is suicidal to the good of the cause—and it is equally true that for an individual doctor to publicly antagonize the Public Health worker is suicidal. Such honest differences of opinion should be settled, not in public but in meetings like this. "Before trying to be sincere in thought, we must extend to the utmost our knowledge." Such investigation of knowledge lies in the investigation of things, and in seeing them as they really are. When we are willing to see things as they really are, then differences of opinion will fade as the dew before the rising sun.

THE FUTURE OF MEDICINE

What secret is the physician harboring? What is Medical Science planning for the race? Where are we going with the human body? Back to the models of ancient Greece, or to a new superman by eliminating disease by exercise, by sanitation, by banishment of worry? Is disease about to be outlawed as a crime?

The Greeks took these questions to their God of Medicine, Aesculapius. Today, unless we refer them to God, like the Christian Scientists, we consult our family physician.

Now, we turn to that other phase of organization,—the grouping of men into classes or specialties.

The family doctor gained the position he held and still holds in legend and story, because he was a "natural born" doctor and an all-round man. Perhaps his life was short and hard, but such is the life of every son of man who must earn his bread by the sweat of his brow. In his day and time, he filled his place and filled it well. In adapting ourselves to the present order of things, have we unthinkingly discarded some of the virtues of the past, while discarding its vices? Are we drifting or have we drifted unknowingly away from that close relationship with our patients which the family doctor held? I think we have, and I mean to say it exactly that way. The people have not drifted away from their doctor, but he has drifted away from them. I have no patience with the alibi that "the people no longer want a family doctor." I say they do want an all-round family doctor and want him as much as ever. The trouble is not with the people, but with the doctors themselves, and because for mercenary reasons or for social prestige many men have entered the profession who are not natural born doctors. They are unwilling to give that all-round service which the people want. And then too, with the increasing knowledge and complexity of the science of medicine, men are forced into specialties which inclines them to think only of one particular organ or disease and forget the human personal element.

Specialties and specialists are necessary and inevitable, but where there is a loss of that relationship between patient and doctor which the family doctor held and where there is an absence of all-round doctors, there has sprung up a horde of cults who seek to fill that void in the lives of men. Wherever the people seek in vain for a "family doctor," they turn to some alternative and there the cults thrive and mul-

tiply. Wherever you look you will find the number of cults and cultists to be in inverse ratio to the number of family doctors. Think of that point, gentlemen, and survey the state as you know it. What is the status of the Profession in those places where the cults thrive best and where they thrive poorest?

We may condemn and try to expose the cults, but let us not forget that sick people want understanding and sympathy, as well as scientific care, and therefore while the profession is busy with scientific care, the cults find a ready market for their sympathy, although that seeming sympathy be only the song of the sirens, leading on to death and destruction.

While speaking of the "family doctor" and of specialists, this is a good time and a good place for me to say that, in my opinion, the family doctor is the greatest specialty and should be the best paid specialist in the whole field of medicine. However bunglesome a man calling himself a surgeon may be in cutting open the abdomen and taking out an offending or an innocent appendix, nature is very skillful and will do her best to repair the injury. Skilled technicians, whether surgeons, roentgenologists or pathologists, are only the ones who should do the work in their particular fields, but the family doctor besides being reasonably skilled in every phase of medicine should be particularly skilled in knowing how to meet face to face the souls of sick men and women.

We may as well admit facts as they are, and if we do, you will not deny that many men finding themselves illy adapted and unable to meet the high requirements of a family physician, turn to some specialty and often without any more actual preparation or natural adaptation for that particular phase of medicine than they had for general practice. All too often, young men shunning the rigor and responsibilities of general practice seek at once some particular phase of medicine as a specialty without any experience in viewing the human body as a complex entity dominated by a living soul.

Some plan should be devised whereby no person could set himself up as a specialist until by strict trial, due examination or legal information he proves himself capable of all he claims. It is true that under our existing rules and laws any person granted license to practice medicine is permitted to try to do anything and everything pertaining to the healing art, whether that be the most delicate brain surgery or prescribing a dose of castor oil.

I recommend that a committee be appointed during this meeting who will report at our next meeting after spending a year studying the question of gaining legal permission to practice a specialty.

Certainly, in this state, and I believe everywhere in the United States, there is genuine need for the standardization of specialists. This Society has always been a pioneer and has always taken the lead in progress. Here is an opportunity to again show the world that Tar Heel doctors are striving for the highest and best in medicine. While on this subject of organization, but pertaining more to the Society organization, there is another recommendation I wish to make. I believe that it will be a wise suggestion that the President of the Society be permitted

to have, either by election, designation, or appointment, one member from each County Medical Society in the State, who would compose a cabinet which would act as an Advisory Council, yet, as a reserved army for our Society, those thus elected or appointed realizing fully in accepting that appointment, that it will be their duty to respond at any and all times to the call of the President to sit in council with him, to respond to the promotion of the best interests of the Medical Society of North Carolina. It is true we have our councilors that look after the individual doctors and the individual welfare of the various county societies in their districts, but this council, composed from leading men from every county can be able to do a great deal more than the councilors in creating sentiment and general educational development that would reach every section and at the same time, give the President a feeling of support and confidence that he has not heretofore felt justified in assuming.

EDUCATIONAL ENDOWMENT

I am not unmindful of the educational obligations that this Society owes to the people of the State of North Carolina and realizing that the coming years must witness still greater extended efforts on the part of the Medical Society of North Carolina, and prompted by a suggestion formulated by and through the wisdom of Dr. James M. Parrott, I want to suggest, if I may be permitted, that this Society formulate some trust agreement, and enter into and create an endowment foundation, this trust to be held and executed by an executive committee elected by the Medical Society of North Carolina and this trust of the Society to be used for the purpose of preserving Medical history, erecting a permanent home for our Society, for maintaining a bureau of medical information to be used as post-graduate study by the members of the Society, and to pay for a whole time Secretary, whose duties it will be to look after the entire interest of the Medical Society, together with all of its subsidies, namely: the public health, hospitals administration, schools of nursing, and all of the various agencies whose single purpose is to render service to humanity. I believe that we can work out a plan for this foundation, and that doctors of means and no family responsibilities will begin to remember this foundation in their wills and bequests, as well as other men and women who are and may become interested in the great work, fostered by and that has been and will be carried on by the physicians through the Medical Society of the State of North Carolina. I have assumed the responsibility of appointing a committee to work out means and to submit a report at this meeting of our Society. I believe if this foundation can be established and a whole time secretary for our Society employed and a permanent home for our organization built and properly endowed, that we will encourage and stimulate post-graduate work for the advancement of Medical Science, Medical Ethics, and Medical History in North Carolina, as well as protect the interest through legislative enactment or preventing legislation which might interfere with the greatest good to the greatest number of people in our State. The average member of the legislature is conscious of the fact that public health is

a good thing, that public health is but the sum total of our individual health, but he needs the advice of some member of the Medical profession who lives in his home county, to advise him the needs of and objections to any proposed legislation, which might be or should be considered for the greatest benefit of all the people.

Too much praise cannot be accorded the State Board of Medical Examiners of North Carolina. From the beginning of the organization, every Board has maintained the highest standard and has upheld the best traditions of our profession. The medical boards have made exceptionally fine records and guarded not only the honor of our noble profession, but at all time has first guarded the interests of the entire State. They have made it particularly rough sledding for fakers and those who would debase our profession by illegal or immoral practices. The State Board of Medical Examiners has always demanded and commanded the most careful discrimination in their selection. None but men of highest integrity and approved scientific attainments need to aspire to enter the practice of Medicine in North Carolina. Not only the medical profession, but every true citizen of North Carolina, should stand squarely behind our Board of Medical Examiners, for there is nothing more important to our great State than the maintenance of a high standard among the medical profession and the elimination of the quacks and cults who would prey upon the innocent and unsuspecting.

The State Hospital for Tuberculosis has increased its activities and added a much needed department for children, which is doing a noble work.

The Extension Department of the University of North Carolina is doing great good with the post-graduate lectures in the various counties of the state in carrying to the doctors the latest and most up-to-date lectures on the various branches of medicine, surgery and pathology to the busy practitioner who has not the time to visit the great centers for his information. We feel indebted to these institutions and commend their activities.

Medical science, and the application of preventive medicine to everyday life have added fifteen years to the expected span of life in the last quarter of a century. We find, by reference to the Bureau of Vital Statistics, that for the year ending 1926, nearly 3000 people died in the State of North Carolina without medical attention.

We also find that the number of women who die from the effects of childbirth is alarming and should not be so, if the proper Medical Science and the sane application of preventive medicine is extended along the proper channels.

The institutions for the treatment and care of the mental defectives are all doing a noble work.

The Orthopedic Hospital for the treatment of the crippled and deformed is functioning in a remarkable manner. The rehabilitation department of the state, with its clinic is in reach of all.

The immortal Osler has said that it cannot be too often or too forcibly brought to us that the hope of the profession is with the men who do its daily work in general practice. Our labors are in vain,—all the manifold contributions of science, the incessant researches into the

complex problems of life, normal and perverted, the profound and far-reaching conclusions of the thinkers and originators—all these are Nehushtan, sounding brass and tinkling cymbals, unless they result in making men better able to fight the battle against disease, better equipped for their ministry of healing. Gradually, often insensibly, the practical advances of the laboratory and of the hospital reach the men with whom, after all, rests the final testing of all our efforts. The work in practical sanitation, the last word in the prevention of disease, the carrying out of new methods of treatment, the exchange of the old accoutrements for the new weapons and the new methods of warfare, these rest with the rank and file of the profession who make effective and translate into practice the new knowledge.

The medical journals, the medical societies, the post-graduate schools, the extension work by our Universities, all help in this good work, and both the profession and the public now appreciate how important it is that physicians should keep well abreast of the times. The difficulty lies often with the individual men who fall into *routine* and slovenly habits of practice, and who never get more than a superficial smattering of the science and of the art of medicine. Even the most industrious and ambitious, absorbed in a limited field, find it hard to get *new life into the old material,* and, *confronted* on all sides by *difficult problems which press for solution,* they turn for aid to the men who have made these problems their special study.

MEDICAL HISTORY

It has been truly said that Medical history is unquestionably the best school of medical ethics and all American physicians should feel proud of the announcement which appeared November 7, 1926, in the New York Times, that Johns Hopkins University had devoted Two Hundred Thousand Dollars ($200,000) for the establishment of a Chair of Medical History and has secured one of America's foremost physicians to fill it, William Henry Welch (age 77). "We feel proud that the day of teaching Medical History in America has dawned, and that students of Medical History will no longer be regarded as a mysterious brotherhood, immersed in cabalistic research" (Dr. Victor Robinson).

THE OLD AND THE NEW

(Quoted from Fraser's Notes, November 1926)

Forty years ago, the first System of Medicine, by American authors, was published in this country. The work was accomplished under the leadership of William Pepper, the redoubtable provost of the University of Pennsylvania. It was notorious that Pepper could obtain whatever he desired, and the contributors to his System were the ninety-nine leading American physicians of the time. In this System we find carefully prepared essays by Reginald Heber Fitz, the man who put appendicitis on the pathological map; John S. Billings, the creator of the Surgeon-General's Catalogue and the Index Medicus; Frank P. Foster, the dean of American medical editors; Alfred Stille, whose scholarly textbook on Therapeutics and Materia Medica has never

been surpassed, and never will; Palmer Howard, who was so good a teacher that Osler dedicated his Principles of Medicine to him; Joseph Leidy, who spread the name of American science around the world; William H. Welch, the founder of bacteriology and pathology in America; Nathan Smith Davis, the first editor of the Journal of the American Medical Association; William Osler, who became the chief physician of our era; William H. Byford, a pioneer of American gynecology; Edward C. Spitzka, one of the most important names in American neurology; A. J. C. Skene, who discovered the paraurethral glands in the female; Abraham Jacobi, the father of pediatrics in America; Weir Mitchell, who became a classic figure during his lifetime; and numerous other makers of American medicine.

There is always good reading in these authors; in spite of ever-accumulating medical bibliography. Austin Flint, Wharton Sinkler, Francis Delafield, and James Tyson, will always be worthwhile, and the present generation will be the losers if they are unfamiliar with the writings of these "old-timers."

FORTY YEARS AGO IN MEDICINE—1886

"The swiftness of time is infinite, which is still more evident to those who look back upon the past."—*Seneca.*

If history—medical history—were taught by commencing at a point not centuries ago, but within our own memories, tracing the steps backward and forward from that start, history would cease to be a baneful dry-as-dust memory contest and take on the human heart interest of a drama unfolding its fascinating plot before our very eyes. I hope North Carolina Medical Schools will give more time to medical history in the future than they have in the past.

I firmly believe that the time has come for the medical profession of the State to get behind the movement to establish community hospitals. Following the establishment of the Central State Institution at Sanatorium, N. C., for the tubercular, many communities have established county hospitals for the treatment and care of those suffering with T. B. and for various reasons cannot be admitted to the State Hospital.

Now the growing question of establishing community hospitals is being heard in almost every community at this time and is calculated to grow faster than ever before in the Carolinas under the helpful and healthy stimulus of the Duke Endowment. The Department of Agriculture of the United States, with its interest in all rural institutions is desirous of assisting in bringing about what the late President Roosevelt described as "A good kind of life on the farm." And one of the important phases of that activity is encouragement of the establishment of rural hospitals, and make them the Community Center for Health Education and distribution of health information.

Farm people have always been neglected in health matters, and the result of that neglect is beginning to show in the fact that, while the rural death rate is practically stationary at present, the city death rate is decreasing. Even the poorest classes in the cities have been better served with free clinics and hospital service at their command. Farming

is naturally a healthful occupation, but this advantage is somewhat offset if adequate medical service is lacking where needed.

In conclusion, Ladies and Gentlemen, Ajax with his heels of wool is pursuing us with relentless fury and only a short while and we who are permitted to be here today must move along to join the throng who have fought the fight, finished the course, and kept the faith.

Dr. H. B. Weaver, Asheville: It has been my privilege and great pleasure for forty long years to have been a member of this State Society, and I suppose for thirty years I have listened to addresses from Presidents, and I want to say frankly to this Society that in all my knowledge and experience we have never received a more practical, ornate and erudite message from any President who has ever sat in that Chair than the one delivered to us this morning, and therefore, if it does not automatically go to the Committee on President's Addresses, I move that it be referred to that Committee.

Dr. J. E. S. Davison, Charlotte: Mr. President, this recalls to my mind the meeting we had last year of this Society at Wrightsville Beach. When they were looking around for a President, they turned their eyes to the hills from whence cometh their strength today.

Dr. Myers was born high up in the mountains of North Carolina in the hill country of the "State of Wilkes," and came to the Piedmont section, Charlotte, about eighteen years ago and has shown himself active, aggressive and attentive to the affairs of our Society, which has fitted him for the exalted position with which we honor him today as our President, and I am pleased to stand here today and say of his address that it was one of the most beautiful and instructive and logical addresses that I have heard delivered not only in the North Carolina Medical Society, or Tri-State or National Society, but in any medical society that I have attended, and I hope the Committee will report it back favorably this afternoon, and will second the motion of Dr. Weaver.

Dr. McBrayer: The House of Delegates has a Committee on President's messages. Dr. Monroe is Chairman and the address will go to that Committee. If there is no objection it will be so ordered. Agreed to.

Dr. Robert T. Ferguson, Charlotte: I have a motion I would like to have considered at this time. It is as follows:

RESOLUTIONS

1. That hereafter the Society be divided into two sections for the discussion of scientific papers, one to be known as the "Medical Section," and the other as the "Surgical Section."

2. That the number of papers to be presented before each section be limited to forty.

3. That the length of time given to the reading of papers be limited to fifteen minutes (invited guests excepted), and that the time for discussion of such papers be limited to five minutes for each member participating in the discussion.

4. That a Committee consisting of the President, the Secretary, the outgoing chairmen of the two sections and the incoming chairmen of the same shall constitute a Board who will select the papers which are to be placed on the program each year.

5. That the titles of such papers be in the hands of the Secretary at least thirty days prior to the Annual meeting.

6. That no paper be allowed to be read before the Society except by its author.

7. That no man whose name appears on the program, and whose paper is not read before the Society (except that he be detained by sickness), be permitted to appear on the program again for three years.

On motion referred to House of Delegates. Adjourned at 10:30 a. m.

SECOND GENERAL SESSION

TUESDAY, APRIL 19, 8:45 P. M.

Dr. John Q. Myers, President, in the Chair.

Dr. Myers, President: Members of the Medical Society of the State of North Carolina, Ladies and Gentlemen:

The gentleman whom I wish to present to you was born in Cumberland County, N. C., a few years after the Medical Society of the State of North Carolina was organized and grew into young manhood in that section of North Carolina. Afterwards he was educated in the city of Fayetteville, Davidson College, and University of Virginia Medical College, and located in Durham for the practice of medicine. Not long after establishing a lucrative practice in this fair city he was called to Davidson College to assume charge of the medical course in that school, afterwards establishing the North Carolina Medical College (later merged with the Medical College of Virginia), a Past President of the Society, I present Dr. J. P. Munroe, of Charlotte.

Dr. J. P. Munroe, Charlotte:

Members of the Medical Society of the State of North Carolina, Ladies and Gentlemen:

Our President has given me a very pleasant duty; he has given me the privilege of introducing one of the speakers of the evening. It is not at all uncommon, in these open meetings of the Society to which the public are invited, to have a representative of some other learned profession speak to us. We are quite fortunate tonight in having with us a representative of that profession which, considering its number, I believe to be the most influential in the world. We are also fortunate in having as a representative of that profession a man of high ideals, of wide information, of genuine culture, and, lastly, a devout Christian. His paper is known far and wide as a paper that is always on the right side of any and every moral question, of any question that involves the good of his State, whether from a moral standpoint or a patriotic standpoint. He is a good representative of that philosophy of journalism which forms the public thought, which directs public opinion, which follows it from the seed to its complete perfection and to its blooming development. It gives me great pleasure to introduce to you the editor of a paper in my home town, Mr. Julian Miller, editor of the *Charlotte News*.

THE PRICE AND PENALTY OF OUR CIVILIZATION

Address of Hon. Julian S. Miller, Charlotte,
Editor of *The Charlotte News.*

Mr. President, Dr. Munroe, members of the Medical Society of the State of North Carolina, Ladies and Gentlemen:

When the very kind and generous invitation came from the executives of your association to have a part on the program of the evening, I was in a hospital unable to talk because of the removal of my tonsils, and often since I have been thinking that in that operation I must also have lost my organs of thinking, otherwise the embarrassments of this hour would have been spared both the speaker and his audience.

For two or three reasons, however, I have been impelled into this engagement. I have felt for some time peculiarly indebted to my friend, Dr. Munroe. I am indebted, of course to other doctors (laughter) but especially obligated to him for an incident in my own home some weeks ago when I fell into a spell of overwrought nerves.

The simple prescription he gave stands out conspicuously as a testimony to the fact that we still have in North Carolina some of the old-fashioned type of doctors who can quickly sense a situation and diagnose a trouble without shunting you around to armies of specialists.

On this occasion my good friend was leaving the house, a home that is like a great many other homes, no doubt, one in which the head of it has scant opportunity to express himself, and the doctor turned somewhat impetuously to the major authority therein and said:

"This man must have absolute rest and quiet for awhile. Take the children away and let him have plenty of sleep. I am leaving some bromide for that purpose."

"How often shall I give it to him, doctor?" she rather anxiously asked.

"Don't give it to him at all," said Dr. Munroe, "take it yourself." (Laughter). He laid me then and there under permanent tribute to him.

Then, too, a feeling of kinship between your profession and that of journalism has taken another inducement. Editors and doctors represent two lines of endeavor between which run varied threads of similarity. First of all, both are public servants and in this respect about the only distinction between them is that the doctors do sometimes get paid for their services (Laughter). There are other bonds of identity.

An Atlanta bishop said the other night that 80 per cent of all reading material seen in a newspaper is lies, so you see we are more akin than you, possibly, have been thinking. (Laughter).

A Methodist minister was telling me recently of an incident in which he figured when he was strolling through a big warehouse of his town during pre-Volstead days and his eyes fell upon a man he recognized at once as being a Presbyterian elder who was squatted behind a barrel taking a drink. He was immensely abashed, of course, and rose instantly to apologize to the preacher for having been caught in such inconsistent attitudes.

"Never mind, my friend," the minister said he told him, "after all, there is not much difference between Presbyterians and Methodists. In this particular respect, the only difference at all between them that I have noticed is that Presbyterians kneel down to drink and stand up to pray, while the Methodists stand up to drink and kneel down to pray. (Laughter).

In the congenial and kindly atmosphere of this convention and grateful beyond the measure of language to tell for the honor of being associated on the program of this evening, I want you to think hurriedly with me along the line of "The Price and Penalty of our Civilization."

Its exclusiveness issues to us a challenge. Nobody has ever had one exactly like ours. It is a fresh civilization, born almost overnight. When we think back a little across the years and compare life as it was a century ago and life as it is today, we are startled into the consciousness that we are living in the sweep of conditions at this hour that were the product of the yesteryear.

The pre-eminence of the nineteenth century was in its application of knowledge to human experiment. Great ideas are not the product of today. They came and went through the minds of the ancient seers and scholars and whatever of scientists the older civilizations boasted. Not until within the last 100 years, however, did the vital concepts that rest behind all of this labyrinthial material structure of ours today leap into expression.

Here, conceivably, is the point at which we often go astray,—in assuming that knowledge, as we have come to know and admire and seek it today, is newly-born. Knowledge, of itself, is not newly-born, but knowledge as it has been released upon its errands of satisfying human aspirations and squaring itself with human needs, is, in fact, a matter of a mere century in age.

Back yonder when the galley slaves were being whipped and scourged to their tasks of building the Pyramids, a great mind thought through the conception of the steam hoist, but it never broke through nor worked itself out into the realities. Not until within the last century did Watts, with a mind no greater than a heart, bring the ancient dream into actuality.

This application of knowledge within the last century sprung forth into two directions and produced two of the greatest revolutions in the annals of humanity. One of them had to do with our material existence and the other with scientific development.

Chauncey Depew said on the occasion of his 91st birthday that he had been present at the birth of every great invention except the steam locomotive and he missed that by ten years. That means, obviously, my friends, that within the life-time of a man contemporaneous with your own day has come into existence every material factor and every inventive device that has changed the whole scope of our living. In the day of that man's birth, there was no telegraph, no telephone, no combustible engine, no automobile, no electric light, no turbines nor dynamos, no radios,—none of the things that are commonplace with the most of us in these times and every one of which has contributed its vital part toward completely upturning civilization within even less than the last half a

century. Nearly everything, as a matter of fact, that has translated our material existence, are products of the mere yesterday. The wizardries of science, the magic of inventions, the miracle of man's mastery of the forces of Nature constitute the history of this hour's achievement.

I can not now take your time to recite in even broad outline a comparative study in this phase of human accomplishment, more than to remind you that if you step back a generation beyond that of your father, or beyond that of some who, gray-haired, sit in this presence, you come into the midst of a time when the Battle of New Orleans was being fought weeks after peace had been signed because there was no means of communication to let the warriors know the war was over: you are back in the day when the horse, which was the swiftest means of communication known to Nebuchadnezzar, was still the fastest motive power available: you are back in the day when your mother or your grandmother sewed with the same crude appliances used by the mother of Moses: you are back in the day when your fathers and grand-fathers plowed with the same unruly implements that were used in the fields in the day of the Caesars.

But in the sphere of the material the revolution has been no more pronounced nor spectacular than in the realm of the scientific and one need not delay to tell a host of physicians what has been occurring within the areas of life in which they are peculiarly interested and about which they are peculiarly informed.

It is a circumstance worth mentioning, however, in this connection that the 100th birthday of Lister, one of your exalted geniuses, was celebrated two weeks ago today: that a century ago the men whose names shine luminously forth from the scientific pages of history were in their infancy or not even born: that Agassiz was a mere stripling: that in the general field of chemistry and physics Faraday was just beginning to work: that Louis Pasteur was not yet born and anesthetics and antiseptic surgery were still unknown: that the geological conceptions of such men as Linnaeus and Lamarck still abounded: that Jenner was still alive and that, although Hypocritus whom you historically know as "The Father of Medicine" lived 500 years before the Great Physician, only within the last 50 years has the foundation structure of medicine been intelligently and successfully laid.

I am reciting this background hurriedly and, of course, inadequately, for a purpose.

Is it not evident to what terminal of thought we are approaching and what the implications of a civilization like this that has been laid easily within our laps? Certain insistent interrogatives press themselves before and upon us. Where are we going? What's the ultimate reaction to all of this ease and high living and facilitous material environment that is ours? The brilliant English essayist, Gilbert Murray, was asked the other day this question, "Will civilization survive?"

"That is not the big question of this hour," he answered. "Will man last?" is the more imperative.

That would seem to be an issue, indeed. I am aware, of course, of the great and bewildering body of medical knowledge, of scientific establishment. I am aware of the magical instrumentation with which

you, as keepers of the flesh and bones of a race, are equipped to combat the subtle and sinister foes that are assaulting the physical structure of man. I am aware of the phenomenal awards that are springing from the laborious and sacrificing labors of the martyrs to laboratory research. I am aware of the victories that have been won over the legions of microbes, before the attacks of which your predecessors in the field of medicine complacently and abjectly yielded.

But I am wondering, nevertheless, even with all of these new factors, with all of this mysterious array of instruments and huge storehouse of new knowledge, you will be able to beat back the new and the strange and the insidious enemies that are beating at the gates of the human body today, that are wrapped up in this modern civilization, the ease of it, the grind of it, the tear of it, the terrible torture of it, in some respects.

Need I remind you, my friends, that it is a tremendous task to try to keep life going in a civilization like this. You are flying squarely in the face of all the laws of biology which have ever been and are still on the side of the barbarian. The easier it is to live socially the harder it is to live physically. That is a historic truth. Dr. Albert Robert Russell, in his fascinating book, "Travels up the Amazon," reminds us that the farther he penetrated into the jungle, the finer human species he found and that, at last, when he had gone to the most distant recesses in his exploiting journeys he reached a spot where the foot of no white man has ever stepped before and there, in that bleak and isolated and uncouth surrounding, there where no lap of the wave of modern civilization had touched, there where life was crude and nakedly animalistic, he found men and women who, for bodily prowess and vigor and for sheer fineness of biologic structure, were fit to pose for Grecian sculptors.

We make much in these days, you medical men do, and not without cause, over the lengthening of human life, a process and an achievement which you are making possible by conquering of master-diseases and by a greater preservation of child-health and saving of infant life, but the life insurance actuaries have not changed their tables of expectancy since they were originally formulated.

That is no reflection upon the adequacy and efficiency of medical science. It is, on the other hand, a brilliant tribute to both of these elements in the practice of the modern physician, that, in spite of all the wear and tear and grind and worry and weariness and hustle and bustle and white lights and motor cars and ease and indulgence that are enthroned in this present-day civilization,—conditions that organically tend to bring down the length of life, because of the capacities of the medical profession and because of the vastness and timeliness of medical knowledge, you are keeping this factor called life expectancy from being notably shortened.

Consider also this other testifying fact, that in spite of the statistics showing that 80 per cent of the babies born in this country are normal at birth, by the time America became desperately in need of them for patriotic service in the World War, 80 per cent had become abnormal and a whole third of them had to be totally rejected because of physical deficiencies. Something certainly happened between the day when these men lay wrapped in swaddling clothes, 80 per cent of them perfect

specimens of bodily form and vigor, and that day a few years later when their country had to turn them back home because one-third of them had developed into bodily unfitness for war purposes and 80 per cent of the total number examined in the draft were found to have some form of defects and impairments. What it was that happened is a matter of speculation, of course, but the statistics in this case remind us that one of the penalties of our civilization, at least, is the penalty of health forfeiture and bodily impairment.

And a yet more serious price that we must pay today for the fine material possessions, the ease, the facilities, the conveniences, the comforts which are everywhere spread, is a growing loss of the great essentialities, a submergence of the amenities and the little humanities under the overcoming tides of materialism. Technicalism is about to take away from us the touch of sympathy. Professionalism is demanding of us that we lay aside some of the finer graces. We have time no longer for the meditative moments and for the contemplations of solitude. Man is no longer master of his mechanics as he is mastered by his own mechanisms. The race is intoxicated with its own physical genius and is fast losing its sense of appreciation that "Life is more than meat and the body than raiment." The affairs of the soul are in eclipse.

Roger Babson, great apostle that he is of economics and finance, was telling a large group of eminent business and industrial leaders the other day in convention: "I am not interested in the science of business you are talking about so much as I am interested in only seeing the whole structure of American business predicated upon the simple, soulful rules of Christianity and these principles seriously applied to the counting room and market place."

Our finer statesmen are telling us that in the matter of gaining the high level of international peace, it is, first of all, and essential above all things to recognize that the habitat of peace is in the human heart and that no instrumentalities of diplomats, no high-sounding phrase in treaty-making, no formulations of agreements to be signed by the governments of the world, will avail to that end until we set in motion those currents of amity and good-will that are the mud-sills of a stable and peaceful society.

The finer things, the greater possessions, the really valuable assets of any civilization are not in the things that we see and handle and by the beauties and wonders of which we may be fascinated, but in the indefinable, the simple, the unseen virtues of the mind and the human spirit. To the task of keeping these pre-eminent, men of your profession and men of all professions ought, in this good and yet penalizing hour, be ready to dedicate the full sweep and scope of their worth in this world.

It is to that precise end that some great hearts are turning in these late years with renewed determination and zeal and to which men of renown in the world of science, of business, of industry and of mechanics are lending themselves freely both in the days of their lives and in the hour of their deaths.

I tell you an incident and I am through, and I am glad to tell it in this splendid city, gladder still to recite it before an audience like this that is already familiar with some of the benefactions of the deed.

Two years ago, one bleak and black February evening, it was my good fortune, in company with a few other friends, to be invited to the home of the late J. B. Duke to witness the signing away of much of his almost unimaginable wealth. The moment is unforgettable, the glow of the incandescence within, the fury of the storm without, the placid face of the man seated upon his great gilded chair looking the supremacies of life squarely in the face.

When the New York lawyer had finished at the end of an hour or more reading that document, made immortal in the esteem and memory of the people of the Carolinas, signing away multiplied millions to the benign causes of his common humanity, one timidity crept up to Mr. Duke to see if he could put in vocalization some of the emotions and thoughts that were so evidently coursing through his soul. In substance this is what he said:

"I have made a lot of money in my day, more than I need to leave to those to whom I am bound by the bonds of love. I have tried to use it to give people employment and industrial place and position in the world, honestly to engage them and profitably to occupy them, and now when I come to survey the field of the need of my fellow-citizens, I would not like to die without resting securely in the knowledge that a large portion of it will go to the social, the educational, the moral and the spiritual betterment and elevation of these people of the Carolinas."

Here was one, my friends, greater than whom North Carolina has probably never produced, whose whole life had inevitably revolved about money and mechanics and who turned soberly and with impressive seriousness at the last altogether to the finer, to the more beautiful, to the invisible but to the everlasting realities,—and, dying, leveled his colossal wealth against his State running wholly to the idols of business and industry. With his work rapidly finishing and his day running to its close, with a glow over his face as radiant as some heavenly phosphorescence, and his soul vibrant with strong and sympathizing emotions, his mind receded from turbines and dynamos and horse-power and electrical energy and world-wide tobacco industry and wealth piled high, from all things purely physical and materialistic, and went out roaming for need and destitution that he might cover it with his millions turned to pitying love.

And I am saying to you, as leaders in one of the finest of all the professions and I am throwing it out to the people everywhere in North Carolina, whether plebian or patrician, whether leaders or followers, high or low, that if such an one as this man, in a moment like that, could lift himself so clear of all the mere things of life and fix them so elatedly and so achievingly upon the essential and the spiritual, surely tiny mites of men like the most of the rest of us, can do nothing quite so plausible and applaudable as to dedicate our meager portions to the same high-minded and altruistic endeavor. (Applause).

Dr. Myers, President:

Ladies and Gentlemen, I present our Secretary, Dr. L. B. McBrayer, of Southern Pines:

Dr. L. B. McBrayer, Secretary:

Mr. President, Ladies and Gentlemen:

I know all of you, as I, enjoyed the beautiful thoughts so beautifully clothed by the speaker who has just taken his seat.

I know we medical men may be pardoned tonight if we take a just pride in the fact that our profession has kept pace with the onward march of civilization. Time was when, if a doctor wanted to finish with the creme de la creme in the study of medicine, he must go to Europe for a season. Times are changed, as has just been told, and now it is not exactly the other way around but the other way across, and they come to America to learn medicine. And it is going to be more and more that way because of the great university that is being established in this town.

Among other great advances in medicine is a clinic that has been established in the city of Philadelphia, and patients come there from every quarter of the globe to be treated, and that clinic sends men to Europe to teach this particular thing that they are doing so well and that has been such an important addition to the other things we are doing and such an improvement on the things we used to do. So this clinic has taught and will continue to teach this particular thing throughout the world as well as at home, for they are also teaching in the University of Pennsylvania. Many of our own specialists in this line have gone there to sit at the feet of these gentlemen and learn the art and the science of the splendid work they are doing, and many of the medical men, one of whom I am, have taken their loved ones there in order that they might receive the great benefit of this clinic. It is a great privilege tonight to have with us a representative of the Chevalier Jackson Bronchoscopic Clinic in Philadelphia, and the most active member, I might say, of that clinic, who will now speak to you. I am glad to present the speaker, Dr. Gabriel Tucker, of the Chevalier Jackson Clinic.

Dr. Gabriel Tucker, Chevalier Jackson Bronchoscopic Clinic, Philadelphia, Penna.:

It is a very great honor indeed to be invited down here to speak to this great gathering. In presenting to you cases of interest from the clinic of bronchoscopic cases I desire to run through a large number of slides and speak very briefly about each case and finally to show a moving picture.

(Showed slides and moving pictures and interpreted them, but on account of darkness of room reporter could not make accurate report. A most interesting and instructive address.)

Dr. Myers, President:

I feel sure you have all enjoyed this most wonderful lecture, and we have yet something in store for you. For forty years Dr. J. Howell Way has been connected with the Medical Society of the State of North Carolina—a period covering the greatest age in medical history.

Dr. Way has been present at thirty-seven of the last forty meetings of our Society, and the minutes, as published in the Transactions of the Society, show that he has been the most active and most aggressive man of medicine North Carolina has produced in the last half century. North Carolina is due him a tribute for a life dedicated to this high and noble cause. We are, verily, every day entering into his labors. That one sows and another reaps is the law of God and of the universe, and the planting of this man's hands in North Carolina has been bearing rich fruitage not only through the last forty years but there is no way to estimate or to measure the limitlessness of the work that a statesman doctor like him does for a people over such a long stretch of years because of the multitudes he touched and the multitudes that are again touched and touched again and again and on and on until the life of such a man lived today has an indeterminate tomorrow, and the influence of such a personality as this is eventually woven into a form of immortality before the grave takes a part in the equation of life. I present Dr. J. Howell Way, President of the North Carolina State Board of Health, and a member of the Board of Trustees of Duke University.

PRESENTATION DR. DAVISON

BY

DR. J. HOWELL WAY

DR. J. HOWELL WAY, President State Board of Health, Waynesville:

There is said to be a proper time for all things, and the proper time for me to die would be right now. However I have no intention in the world of obliging the gentleman who has just chronicled my obituary. It would be a very interesting thing indeed, were it not for the lateness of the hour and the much greater importance of the things to be said by the speaker whom I am to introduce, to relate to you the efforts made in past years for medical education by the people of this state, but I shall not take your time in so doing. Suffice it to say that the institution located in your town, brought here from Randolph County in 1887, just four years after its creation by the genius of a Pennsylvanian, Dr. John Franklin Crowell, was brought here by the effort of medical men to found a medical school in North Carolina and looking to the development of professional men in the state. But I shall not take up your time to chronicle that. Suffice it to say that the dream thirty-seven years ago of Dr. John Franklin Crowell, president of Trinity College, is now about to be realized in that North Carolina and the South are about to have developed here a great, first class school of medicine with ample equipment, complete plant, and endowment sufficient for all necessary purposes. I have pleasure in introducing to you, ladies and gentlemen, Dr. Wilburt C. Davison, the recently elected dean of the medical school of Duke University.

THE DUKE UNIVERSITY SCHOOL OF MEDICINE

WILBURT C. DAVISON, M.D., A.M., F.A.C.P., Dean of the Medical Department of Duke University.

Mr. President, Ladies and Gentlemen:

I wish to express my pleasure for this invitation to address you and for the opportunity to present the plans of the new medical school. There are at least six factors which are essential for the success of a medical school—the buildings, the staff, the students, the type of teaching, the service to the community and last, but not least, the cooperation of the members of the profession in the State. It is the great desire of everyone connected with Duke University so to carry out the plans for the first five of these essentials that the sixth one, namely, your cooperation, will be merited. We all wish you to regard this school as yours. Any suggestions which will increase the service of this school to the State will be more than welcomed, for service is to be the keystone of the arch of this structure. These plans are in the tentative stage at present so I hope that you will not hesitate to point out anything which should be changed, for only by working together can this school fill the place which Mr. Duke intended.

(1) The *buildings* follow the same general arrangement as those at Nashville, Rochester, N. Y., and Chicago. The basic idea has been to group the various preclinical and clinical departments so that as much correlation as possible can be obtained. Physiology and biochemistry have an intimate relationship to internal medicine, and pathology is closely associated with surgery. The X-ray department has been placed as nearly as possible equidistant from the out-patient department, medicine and surgery. Another valuable feature is the proximity to the medical school of the University departments of the basic sciences, chemistry, biology and physics. It is expected that the buildings will be ready for occupancy before September, 1929, and that first and third year classes can start at that time.

(2) The *staff* will be appointed by the Trustees as soon as the building program has made sufficient progress. In the recommendations for appointments, all of us here have an interest, for the personnel is of more importance than the stone and mortar. Information is now being collected in regard to the leaders of the various branches and suggestions are welcome. If most of the data obtained indicate that a certain man is the most desirable he will be asked to consider the appointment. If his answer is favorable, he will be invited to Durham to meet the officers of the University, the officers of the North Carolina Medical Society and other members of the profession in the State. We all feel it to be essential not only that the head of any department should be a leader in his own field, but also that he must be a man who will have the confidence and cooperation of the physicians and surgeons of the State. The heads of these departments will be on what is known as a "full time basis." They will be given adequate salaries and will not engage in private outside practice. There are many arguments in favor of and against this system, which I shall not enumerate, but shall

merely mention two advantages; first, that the head of the department will be able to give his full time to the care of the patients in the hospital and to the training of students and post-graduates and, second, that he will be removed from competition with the members of the profession. There will probably be private patients whom you may wish to refer to the Professor of Medicine or Surgery for consultation or operation, and I hope that there will be, in order that this school can be of the greatest service, but all fees collected for private patients will go to the medical school and no private patient will be seen who is not referred by his or her own physician. It is hoped that physicians and surgeons in practice in the vicinity of Durham will accept part time appointments at the medical school and hospital, to assist in the care of patients and the teaching of students.

(3) The *students* will be limited to fifty in each class. It is possible and probable that for several years the classes may not be filled, for there will be rigid selection for entrance. This statement does not mean that a college degree and a vast number of hours will be required for admission, for I personally feel that two years of college, including one year of biology, one year of physics and two years of chemistry, are adequate preparation. It has been demonstrated that fewer failures occur in medical schools if the entering students are carefully selected on the basis of the quality of their preparation rather than on its quantity.[1] The actual requirements will not be decided until after the staff has been appointed but I trust that the basis of selection will be the candidate's intelligence and character instead of the length of his preparation. There is no doubt that a long preparation for the study of medicine has many advantages but the average age of twenty-six years at which the present medical students graduate is such a handicap to their post-graduate training as to require serious consideration to be directed toward condensation of their preliminary preparation. The same idea is behind the proposal that five terms of nine weeks will be given each year, commencing September first, with vacations of one week each in December, March and May, and of one month in August, and that the degree of M.D., will be granted after the satisfactory completion of fifteen terms. These may be taken consecutively (graduation in three calendar years, or four terms may be taken each year (graduation in four calendar years). Such a curriculum would in no way affect the courses at any other medical school. If the students who have received their first two years of training at Wake Forest or Chapel Hill wish to spend their clinical years at Durham, they can enter the eighth term, which would correspond to the third class, on June first or September first. It is impossible to state whether the faculty will eventually adopt this scheme but I feel that it will maintain the present standards of medical education and at the same time enable students to graduate at an earlier age than is possible at present.

(4) The type of *teaching* has not, of course, been outlined but it may not be out of place to mention some of the factors which must be considered. We hear frequent statements that the curriculum of this school is too theoretical while that of another one is splendidly practical. As a matter of fact, the methods taught in any medical school represent

a compromise between the so-called theoretical ones which require a hospital for their accomplishment and the practical methods which can be carried out in general practice without elaborate equipment. The faculty of every medical school wishes to teach its students the most modern methods and also to instil into their minds the additional thought that these methods are not infallible and that better ones will probably be evolved. Everyone realizes that in medical school only the foundation of medical knowledge can be laid and that the student must be given the training to enable him to keep constantly building and adding to the superstructure in accordance with medical progress. However, to produce this "open mind" toward new discoveries is naturally to weaken to a certain extent the students' confidence in our present practical remedies, and the knowledge that many of the graduates of a school must practice medicine without modern hospital facilities has often caused more emphasis to be laid upon the practical medicine of today than upon the more theoretical possibilities of the future. The presence of so many splendid community hospitals in North and South Carolina will greatly simplify this problem and the medical students here can safely be taught the most modern methods, in addition to their fundamental training, for within a few years the physicians who practice in every county will probably have access to a hospital and its facilities. Formerly, the charge that a curriculum was too theoretical had some basis for the graduates of certain medical schools were often at a loss without hospital connections and as a result they congregated in cities instead of going into the country where they are needed and where their field for service is greater. Consequently, the community hospitals in North and South Carolina, in addition to the service which they are rendering in the care of the sick, are an important factor in medical education; first, by allowing the medical schools to modernize their teaching and second, by causing a redistribution of doctors from the cities, with one doctor to every 600 people, to the country districts with one doctor to every 1200[2].

The modern medical curriculum is often blamed because more and more doctors are entering specialties and avoiding general practice. "General practice is doomed" is a common statement and the medical schools are held responsible. It is true that seventy-four per cent of the recent graduates of the medical schools throughout this country are specializing or planning to specialize in one or another branch[3], but is this the fault of the medical school curriculum or of natural economic causes? I personally think it is the latter. In this country the opportunities for service, reputation and monetary reward are at present unquestionably higher in the specialties than in general practice. Consequently the trend has been toward specialization, but even now the tide is turning. Twenty-two per cent of the 1915 graduates became otolaryngologists. At present that field is over-crowded and only fifteen per cent of the 1920 graduates are entering it[3]. On the other hand the opportunities in pediatrics are increasing and we find that while only six per cent of the 1915 graduates in this country became pediatricians, eleven per cent of the 1920 classes are specializing in the diseases of children[3]. Before the War in England the more ambitious men became

specialists but during the last few years, because of the greater number of Harley Street consultants, more of the keener men are going into general practice where the rewards are now greater. There have been no changes in the medical school curriculum which are responsible for these trends; they are a response to economic conditions and I feel that we shall soon find in this country that the over-crowding of the specialties will cause an increase in the number of general practitioners—a consummation much to be desired.

(5) The medical school can be of *service to the community* in at least three ways: in the care of patients, in post-graduate instruction, and in assisting the community hospitals.

(a) The physical facilities of the wards and out-patient department for the care of patients will be second to none and every effort will be made to provide the best of medical and nursing care, for this is the primary function of the hospital to which everything else is secondary. "Where will the patients for the new medical school come from?" is a frequent question. Many believe that a teaching hospital requires a huge metropolis. However, in 1913, Osler[4] pointed out that a large population was not essential for a medical school and that Marburg in Germany, with twenty-three thousand people—half the size of Durham—maintained a medical school of the first rank. The population of Jena and Heidelberg are very similar to that of Durham and they certainly have no dearth of patients. This statement of Osler's is even more true today because of the tremendous increase in the number of automobiles. For medical schools in large cities, automobiles, by increasing the traffic congestion, have actually reduced the amount of territory from which patients may attend clinics. For instance in New York and Chicago nearly an hour is required to go from the center of the city to the medical schools. On the other hand, with the splendid roads in North Carolina, patients can be brought long distances by automobile in the same time and with more comfort and safety than is possible in traversing a large city. In addition to serving the 43,000 people of Durham, the wards and out-patient departments of the new medical school are thus readily accessible to the half million people who live within a fifty mile radius of this city. In addition, it is hoped that the medical school and hospital will be so conducted as to merit the confidence and cooperation of the staffs of the community hospitals throughout the two states so that patients will be referred to Durham. A large percentage of the most interesting and instructive cases in the hospital with which I am associated at present come from this area and I hope, without reflection upon that institution, that in the future they will prefer Durham to Baltimore.

(b) The need for more provision for *post-graduate study* is very acute not only in this country but abroad. There are very few clinics to which a man can go, after he has been in practice several years, to obtain the additional training which he has found he needs. When insulin was first introduced, several institutions, through the kindness of Mr. John D. Rockefeller, Jr., established temporary post-graduate courses to train physicians in the use of this new remedy. The fact that so many doctors availed themselves of this opportunity is witness

that innumerable other courses are desired. It is the plan of the new medical school to attempt to fill this need. If a doctor in North or South Carolina wishes to spend a few days, weeks or months reviewing his knowledge of pediatrics, of obstetrics, of the treatment of syphilis, of studying the efficacy of liver diet in pernicious anemia, or if he has to do an unusual operation and wishes to refresh his memory of the anatomy involved, the facilities and equipment at Durham will be at his disposal. The service of a medical school should not be limited to the training of its own students and staff but should extend to giving the members of the profession of the state the benefit of everything it has. Training in preventive medicine and public health, not only for the students in the medical school, but also special work for those who wish to enter upon a career as health officers will be provided. Another of the functions of the medical school will be the lending of books and journals, for a complete medical library is contemplated. The library was actually started yesterday by the gift from Dr. John E. S. Davidson of Charlotte of a number of old books which he had collected. Old books are very valuable, for it is only by teaching students the history of medicine that they can gain a true conception of it and realize the progress which is constantly occurring.

(c) The medical school can also be of service to the community hospitals. The pathological and bacteriological departments can fill a need in the diagnosis of sections and cultures, the school of nursing can provide special training in obstetrics, pediatrics and other branches for the nurses of the smaller hospitals who desire it.

These are merely a few examples of the innumerable ways in which the school can be of service to the state, and in closing I should like to emphasize again the hope that you will make suggestions so that these plans will merit and receive your cooperation. The word Service is to be carved into the corner stone.

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THIRD GENERAL SESSION

WEDNESDAY, APRIL 20, 1927.

The Society met in Room "A" of the Washington Duke Hotel and was called to order by the President, Dr. Myers.

The report of the House of Delegates was presented by the Secretary-Treasurer, Dr. McBrayer and on motion was adopted.

REPORT OF COMMITTEE ON OBITUARIES

Dr. C. M. Van Poole read the names of physicians deceased since the last meeting of the Society and presented the report.

Fellow members of the Medical Society of the State of North Carolina:

Again we have met to make record of the names of those of our comrades who have fallen in the race of life, and to pay a tribute of respect to their service and their memory.

At each annual meeting of our society we listen to these notes of sorrow and go about wearing the badge of mourning, reminded of those who shall be with us no more, and are made to feel that we, too, are marching on toward the silence of a speechless grave. We can but be impressed with the uncertainty of mortal life and the certainty of fateful death.

In the discharge of the mournful office assigned to us, it is not our province to awaken those tender regrets which the recital of the personal virtues and public services and late associates must ever excite. This grateful duty will be performed by those who are best qualified for it by long acquaintance and intimate association.

The only theme on which it is becoming us to dwell takes us to a higher plane, and we could preface what we wish to say by the declaration, that the first requisite to the highest and most symmetrical development of what is noblest in man, be he soldier, sage or physician, is sincere, consistent, heartfelt piety. These are indeed mere natural virtues which command respect and admiration, but after all "a Christian is the highest type of man."

Piety toward God is the surest incitive to the full discharge of all duties toward man, the truest and most unfailing inspiration of honor, the strongest safeguard of personal integrity, the most efficient aid in the pursuit and attainment of whatever things are just and true and lovely and of good report. The man who ever lives as if under "the great Taskmaster's eye," who believes and remembers that God is now the witness of his conduct and to be his final Judge, and who in all his acts, personal and public, strives to maintain a conscience void of offense, is the man who, above all others, will be the most fearless in meeting every responsibility and most faithful in discharging every trust. This is the spirit that elevates its possessor above all that "is ignoble, narrow, and selfish, because all the ends he aims at will be those of country, God and truth."

Today the voice of Providence unites with the voice of inspiration in admonishing us that all the glory of man is as the flower of the

grass. We are warned that pallid death with impartial hands, knocks at all doors; he enters with equal freedom the houses of the humble, and the gates of kings; he casts his chilly shadows alike over the lonely hovel and the millionaire's palace; he strips off the rags of the pauper and the robes of the monarch: and so, today, pride, ambition, vainglory and the strifes and animosities of the hour, veil their faces, and eternal things alone seem worthy of supreme regard. We hear the voice coming out of the dead past, saying, "There is nothing great but God."

If, by these mournful dispensations of Providence which have called us together, we are taught more impressively than ever the evanescence of all earthly good; if we are possessed afresh with the conviction that "he builds too low who builds beneath the skies"; if we are led to the place where the defenseless find shelter and the guilty find pardon; if through the grace which fortifies the soul against the dread of death we gain preparation for the duties of life; if we address ourselves with new resolutions to the discharge of those duties with minds chastened and hearts purified, then this meeting shall have accomplished its salutary purpose.

The hearts that so lately throbbed with patriotic ardor are still. The lips that so lately moved in prayer for God's blessing and guidance in the operation of our noble profession are mute; but be it ours to keep alive the sacred flame and to prolong the prayer that Heaven's best benedictions may rest upon and guide those of us who remain. No man has lived in vain whose ministry of service has enriched the blessings of his fellow-man, for though dead, yet he speaketh in fadeless virtues which will continue to live.

E. G. Moore,
C. M. Van Poole,
H. A. Royster,
Committee.

LIST OF DECEASED PHYSICIANS

Name	*Address*	*Date of Death*
Achorn, Jno. Warren	Pinebluff	Aug. 5, 1926
Briggs, Abram J.	Hendersonville	Feb. 2, 1927
Bohannan, T. A.	Burlington	March 1927
Dodson, H. H.	Greensboro	Oct. 22, 1926
Faison, I. W.	Charlotte	July 9, 1926
Faison, W. W.	Goldsboro	Oct. 22, 1926
Ferguson, Henry B.	Halifax	July 24, 1926
Gilmer, C. S.	Greensboro	Feb. 4, 1927
Ginn, Theo L.	Goldsboro	March 21, 1927
Griffin, J. A.	Clayton	July 21, 1926
Harper, Wm. Troy	Southern Pines	Died at Oteen
Hunnicutt, Wm. J.	Asheville	Sept. 5, 1926
Justice, Z. K.	Davidson	Feb. 13, 1927
Klutz, A. A.	Chapel Hill	Dec. 1926
Ledbetter, A. E.	Greensboro	June 3, 1926
Lewis, R. H.	Raleigh	Aug. 6, 1926
Long, J. W.	Greensboro	Aug. 1, 1926

McBrayer, Thomas	Forest City	Sept. 1926
MacKethan, Jno. A.	Fayetteville	Sept. 10, 1926
McCullers, J. J. L.	McCullers	Dec. 26, 1926
McLean, Charles Stewart	High Point	Jan. 5, 1927
Oats, Wm. C.	Belmont	Feb. 15, 1927
Packard, F. S.	Norlina	Aug. 10, 1926
Shepard, F. A.	Liberty	Dec. 9, 1926
Steele, Wm. H.	Rockingham	Aug. 21, 1926
Whiteside, J. C.	Maiden	Jan. 11, 1927
Whitehead, J. P.	Rocky Mount	April 11, 1927
Outlaw, J. B.	Rocky Mount	April 13, 1927
White, C. S.	Winston-Salem	April 18, 1927
Thompson, S. W. Sr.	Wake Forest	April 15, 1926

DR. T. A. BOHANNAN

Dr. T. A. Bohannan, of Burlington, for many years a leading citizen and medical practitioner, died at his home on March 10th, 1927, after a long confinement caused by a fall in which he fractured his hip. He was 86 years old.

He was highly educated, with his faculties unimpaired with the advance of age.

DR. H. H. DODSON

Dr. H. H. Dodson, a well-known X-ray specialist and one of Greensboro's outstanding citizens and physicians, died October 22nd, 1926, at his residence in Greensboro, N. C., at the age of 71 years.

Dr. Dodson was born at Milton, in this state, February 20th, 1855, and was the son of Dr. Thomas R. Dodson, a well known practitioner of that place. He received his degree at Medical College of Virginia, where he was an honor student. Returning to Milton after his graduation he took up the practice of medicine and in 1883 he was married to Miss Annie Barrett, of Wyethville, Va., who died more than 20 years ago.

Coming to Greensboro in 1905, he relinquished the general practice of medicine and devoted his time and attention to X-ray work. In this line, he was acknowledged to be one of the foremost specialists in North Carolina. He was a member of the State Medical Society, a charter member of the Tri-State Medical Society and for six years a valued member of the North Carolina Board of Medical Examiners, 1908-1914.

Dr. Dodson was a quiet sort of a man, who went about doing good, and was universally popular with the members of his profession.

HENRY H. DODSON

By

Drs. Benj. K. Hays, John Rodman, and L. B. McBrayer.

On account of our close association with Dr. Dodson, particularly on the State Board of Medical Examiners, and also our love for him and devotion to him, we can not let this opportunity pass without performing the last office of friendship for our departed confrere and friend.

Those of you who have served on the Board of Medical Examiners with six other doctors for a term of six years know that you get closer together, that you have better opportunity to learn the strength and weaknesses, the greatness and goodness or smallness and badness, if such there be in man who was ever selected by his fellows to serve in this honorable and responsible position. Dr. Dodson measured up to every responsibility and requirement that ever came to him. He had ability to spare, and he used that ability in every activity of his life, which were many. His ideals of honor and honesty were of the very highest, and these remained in him and with him unsullied until the last fleeting breath, and continue with him in the realms of the blest.

Unobtrusive, modest to a fault, he did not seek position or honor, per contra these must seek him out and they did. He was frequently on the programs of our State and other Medical Societies, not at his own request, but always at the request of the chairman of the Section, and his scientific papers always brought delight and instruction to his hearers. He was a member of the State Board of Health from 1899 to 1901, being elected to that position by our Society, and in his service here, as elsewhere, he took a high stand and set in motion some activities that continue to bless mankind. In 1908 he was elected a member of the State Board of Medical Examiners for a period of six years, ending in 1914. Here, too, with his confreres, he worked out policies and procedures that have been copied and continue to be used by nearly every state in the Union.

Dodson! we love thee! Thy imperfections, if any, we have long since forgotten! Thy virtues, which were many, we enshrine in our hearts and memories, where they will live forever and ever! Thou hast earned a well deserved rest! The peace that attended thy passing be with thee always! We follow thee soon! Till then, good-bye!

DR. I. W. FAISON

Dr. I. W. Faison of Mecklenburg County, one of the State's most eminent physicians, former president of the North Carolina Medical Society, and one of Charlotte's most prominent and influential citizens, died at his home, Charlotte, July 9, 1926, at the age of 73 years, after a lingering illness of 18 months.

He formerly practiced medicine at Mt. Olive, moving to Charlotte in 1892, and did general practice there until 1901, when he abandoned this field and specialized in internal medicine, making a special study in the diseases of children.

In addition to his career as an outstanding physician, Dr. Faison left a deep impression on the community of Charlotte as a leader in other fields than medicine. He was a relentless and aggressive fighter for civic progress and the moral uplift of his community.

DR. I. W. FAISON

COMMEMORATIVE REMARKS ON THE LIFE AND CHARACTER OF THE LATE DR. I. W. FAISON

BY

Dr. Robert L. Gibbon, M.D., F.A.C.S.

Biographical observations, reminiscences upon the character, peculiarities, accomplishments, etc., of deceased friends and loved ones has always been of great human interest, whether it be around the fireside of the humble, who recount to one another the doings of some obscure father or mother, or in the seat of the mighty with a whole nation as auditors.

The besetting sin of the biographer is what McCauley has called the disease of admiration," in which state of mind the writer is prone to make of his subject, a catalogue of impossible virtues, a paragon of human excellence. Hence, it is that there are only a few really great biographies. Since distance lends enchantment, it is a plausible theory that all of the numerous gods of Greek mythology were only men, whose proportions and powers were magnified to god-like dimensions by successive generations of admirers and votaries.

With this auto-suggestion curbing the natural inclinations of friendship within the bounds of reason and facts, I shall endeavor to accomplish the task assigned me of furnishing a brief background for such other members of this Society, who can far better than I, discuss and commemorate the memory of our deceased friend and fellow member, Dr. I. W. Faison.

My first acquaintance with Dr. Faison began many years ago when he moved to Charlotte, probably in 1889 or 1890; although I had known of him before.

At this point the temptation to picture the Charlotte of that day, particularly from the medical standpoint, is most strong. Of public health laws, there were practically none, at least compared with what we have now; typhoid was endemic, diphtheria and colitis took their yearly toll of infancy and childhood, almost undeterred by the medical profession, families were larger then than now, despite greater health hazards. Every doctor considered himself an expert in all branches of the healing art and resented rather bitterly any suggestion that his confrere had any special knowledge above his own.

It was amidst such surrounding that the subject of our commemoration found himself, but it was an atmosphere perfectly familiar, for every other town in the State was of the same type.

The Faisons were, and still are, a numerous and influential family in Eastern Carolina, where before the Civil War they possessed large landed estates and farmed in the traditions of a civilization that has now practically passed.

It was Dr. Faison's fate, however, to grow up in that period of poverty and economic and political disturbance just following the war when the almost princely land-owners of former days were reduced to the last extremity. Perhaps it was the economic conditions that had something to do with his determination to study medicine. At any rate

this period could not fail to make a lasting impression upon a man of his character and temperament. Politics in those days was rampant and to his dying day Dr. Faison never ceased to take a lively interest in political affairs. What I have said here, and may say later, of a personal nature, is the result of certain chance remarks he has made in my presence, and not of any investigation.

He was a man of massive build, and in his prime apparently possessed of great physical strength, yet I never knew him to demonstrate it in any way. He once told me that he didn't know how strong he was. His mind was alert and receptive even up to old age, in marked contrast to many who seem pretty well concreted above the ears after a certain date. It was remarked of him that he was a better doctor, more progressive and judicial in his views, at 65 or 70 than at 40.

He was a man of ardent temperament, a partisan by nature accepting or rejecting with characteristic decision. He was emphatic, and even vehement, in his opinions, defending or opposing with complete abandon, again quite in contrast with the average Scotch-Irish inhabitant of this region, who generally wants to see which way the cat jumps before committing himself. Dr. Faison, on the other hand, seldom occupied that vague shadow-land in which a flash light was necessary to locate his position. He was, of course, not always right, but right or wrong he did not often sit astride the fence. Natures like his are apt to yield a loyal and intense devotion to those who are so fortunate as to gain their confidence, and so he had his heroes, political and medical, by whom he swore and died. He had in him also something of the spirit of the Crusader in his advocacy of those causes which appealed to his heart and conscience; in season and out he never failed to urge their adoption.

It cannot be denied, and he himself would be the first to admit it, that the very ardor of his disposition sometimes led him astray, begat a too hasty decision, or a wrongly timed opinion—a too emphatic declaration. But what of it? He was certainly right as often as any of his contemporaries, and more so than most of them. Although a large man, he was restless when he had any responsibility on his mind, and on the occasions when he honored the writer by asking him to do some surgical work I have often found him ten or fifteen minutes before the time set, striding up and down the corridor of the hospital, his great arms swinging and nerves on edge until the deed was done.

So much for the man himself. His face and figure are so familiar to us all, his characteristic energy and emphatic personality so fresh in our memory, the time of his departure from our midst so recent, that it would be entirely superfluous to say more. There remains but to consider his influence medically upon the community, and upon his professional associates.

His medical life as it affects this community quite naturally falls into two divisions, namely, before and after the coming of the N. C. Medical College to Charlotte.

The first of these periods is not of any great interest medically. Scientific medicine in Charlotte was at a very ordinary stage. The efforts of the profession were scattered over the whole field of medicine

with the usual result that comes from the lack of concentration for is it not largely true that

"He who seeks one thing, and one thing alone,
May hope to achieve it before life be done;
But he who seeks all things, wherever he goes
Only reaps of the hopes, which around him he sows
A harvest of barren regrets."

It was in the second, or College period that our friend really found himself. The coming of the College enabled him, as it did some others, to center thought and study upon some particular branch of the medical art, while the incentive of teaching aroused the latent energy for that study and preparation absolutely essential to anything like the mastery of a subject.

Dr. Faison took up the teaching of Diseases of Children with his usual intensity and energy. He loved children—liked to treat them, and in this work he found a satisfaction and interest not otherwise to be had. His professional reputation grew amazingly and in a few years he became one of the best known pediatricians of the State. Let us remember also that this occurred when he was well past middle life.

His interest in public health measures never flagged, and he never ceased to urge the passage of such laws and ordinances as he thought were beneficial to community health and well-being. He was specific in his efforts to spread the knowledge of the cause and prevention of tubercular diseases among the people, and an earnest advocate of all efforts made to curb the ravages of this great plague.

To him also, I think must be given the credit, more than any other local man, of insisting that medical men be awake to the early recognition of certain surgical emergencies of early infant life, namely, congenital pyloric stenosis and intussusception in children under one year. There is nothing new or novel in these diseases, but the tendency on the part of many men to consider their possibility last, instead of first, when the prospects of cure is favorable, aroused the righteous and emphatic protest of Dr. Faison.

He was devoted to this Society, seldom missed a meeting and almost always had something to say in his characteristic manner upon almost any subject. He was very popular with the younger members, who were tolerant of his idiosyncrasies and interested and entertained by his forceful and original style of oratory. His remarks were seldom formal, usually they were impromptu, although he may have given thought to the subject beforehand. I do not remember ever to have heard him read a prepared paper, nor to have seen a published one.

It is a pertinent question then to ask why a man who wrote practically nothing, who read no prepared speeches or addresses, who was not superior to many of his associates in educational advantages, learning or mental powers should have effected an influence upon his locality and local medicine as but very few, if any of us who are left, can ever hope to equal.

To my mind the answer lies in that which we call, for want of a better name,—the temperament of the man. What he believed, he be-

lieved; nor could he keep silent about it. Many of us have beliefs and convictions but we do nothing, say nothing, influence nothing. It was otherwise with him; he called aloud from the house-top. Wrong he may have been, and was, at times, but the times he was right counted something, did something. And finally let us recall what was said of a greater man—"The good men do lives after them, the evil is oft interred with their bones."

And so he passed away. Strange thing is this; to come, to grow, to mature, to weaken, disintegrate, and die. Hardly worth the price we pay if there be nothing yet—beyond, in which he firmly trusted.

DR. W. W. FAISON

Dr. W. W. Faison of Wayne County, Superintendent of the Colored Insane Asylum at Goldsboro, died October 22nd, 1926. He was 72 years old, and the cause of his death was cerebral hemorrhage.

He was a graduate of the Jefferson Medical College at Philadelphia, an elder in the Presbyterian Church and a member of the Odd Fellows Lodge at Goldsboro.

As an official and expert in his line, Dr. Faison stood at the head of his profession. He was painstaking, conscientious, wise and solicitous of the welfare of every patient which came under his care.

As a man and as a citizen he stood high in public esteem.

DR. W. W. FAISON

By Nell Battle Lewis

Because he was naturally retiring, too few people realize the excellence of the work which the late Dr. W. W. Faison did for this State. To care for crazy Negroes, never with sufficient funds to do so adequately, is hardly the kind of thing the self-seeking would choose for a life-work. That is what Dr. Faison did for years, modestly, unselfishly and as efficiently as appropriations from a State rather niggard in charity allowed. The spirit that pervaded the State Hospital for the Negro Insane at Goldsboro was admirable. North Carolina can ill afford to lose an official like Dr. Faison who was no mere political job-holder, but a real public servant.

WILLIAM WILLIAMS FAISON, Doctor of Medicine.

By William H. Cobb, M.D.

"Then steal away, give little warning,
Choose thine own time,
Say not Good-night, but in
Some brighter clime,
Bid me Good-morning."

These words portray so beautifully and truthfully the transition of our late lamented friend and confrere, who while engaged in the early morning of October 22, 1926, making his daily rounds in the wards of the Institution over which he so ably presided, was suddenly called up higher, without suffering and without complaint; and when the summons came he was ready, as was Samuel of old to answer, "Here am I."

William Williams Faison was born August 16, 1854, at Pleasant Retreat, Sampson County, North Carolina, this being the country estate and ancestral home of the Faison family for generations. His father was William Alexander Faison, a successful planter, his mother, Harriet Caroline Williams, of a prominent family of Greene County. From each of these parents he inherited, culture, refinement and gentleness of character, which virtues predominated so largely through his life. Dr. Faison was educated at Clinton Academy and Carolina Military Institute at Charlotte. Finishing his literary education at the latter place, he read and studied medicine under the late Dr. J. D. Spicer of Goldsboro, North Carolina, and completed his Medical studies in 1878, graduating from that splendid old school, Jefferson Medical College of Philadelphia. After graduating, he practiced medicine for a short while in Goldsboro, N. C., going from there to Cabarrus County where he followed his profession for a limited time. Leaving Cabarrus County, he spent some months in Brazil, going to South America by way of Europe in the year 1882. He returned to the States and in 1883 was elected Assistant Physician of the State Hospital in Goldsboro, North Carolina, which position he filled with loyalty, fidelity and distinction until 1906, when, upon the death of the Superintendent, Dr. J. F. Miller, he was unanimously chosen as his successor at the head of that Institution. Dr. Faison spent forty-three years of his life in the service of his State, caring for and improving the conditions of the Colored Insane entrusted to his care; and the Institution over which he presided is accorded a National reputation for the thrifty, economical, humane and scientific administration of its affairs.

He was a splendid executive, and in the administration of his office, his highest ambition was the security and proper care of those unfortunates which the Commonwealth had committed to his keeping and protection. His administration was marked by fidelity to duty, kindness and consideration to the afflicted, and justice and deference to those under him in authority. In his profession, Dr. Faison was eminent as an alienist. He was a Fellow of the North Carolina State Medical Society, member of the American Psychological Society and the American Medical Association.

He was an Odd Fellow and was Past Noble Grand of the Goldsboro Lodge.

On June 16, 1886, Dr. Faison was happily married to Miss Susan Virginia Faison, the sweetheart of his youth, the daughter of Col. Thos. I. Faison of Sampson County, and he is survived by his widow and three sons born to this union, Ralph R., William A., and Preston K. Faison. His home life was marked by simplicity and no husband nor father was more indulgent than he. Retiring and modest in his nature, he was never known to extrude his opinions and judgments upon others, but was a wise counselor and sincere friend.

In religion he was a Presbyterian, one of the Elders in his church, and his Pastor always found hearty cooperation from him whenever there was aught for him to do, regular in attendance and always a bulwark in time of stress and need. In all the walks of life a Christian

gentleman and an humble Physician, who followed in the footsteps of the Great Physician,

"For loving thought
Was warp and woof of which his life was wrought,
He is not dead,
Such souls forever live,
In boundless measures of the love they give."

DR. H. B. FERGUSON

Dr. H. B. Ferguson of Halifax, a beloved family physician who practiced his profession for forty years, died at his home in Halifax on July 24th, 1926, at the age of 65 years.

His death came unexpectedly after a short illness ascribed to kidney and heart disease.

DR. THEODORE L. GINN

Dr. Theodore L. Ginn, of Wayne County, died suddenly March 21st, 1927, from an attack of angina pectoris.

Dr. Ginn was 48 years old, and had practiced medicine in Goldsboro for 27 years. He was a man of unusual Christian character and did a large amount of charity work among people unable to pay for it. He was for many years a member of St. Paul's Methodist Church, and did great service as a Sunday School worker.

Children of the Odd Fellows Orphanage attended the funeral services in a body. For a number of years Dr. Ginn had given his services to the Orphanage without charge.

The large number of people present at his funeral showed in some measure the regard in which he was held by the people in his community.

DR. J. A. GRIFFIN

Dr. J. A. Griffin, of Wake County, died at his home in Clayton, July 21st, 1926, at the age of 72 years.

Dr. Griffin had lived in Clayton for forty years, or more, and given his time and his service to the practice of his profession. He had been in feeble health for some time, yet his death was sudden.

His funeral was held from Horn's Memorial Church, of which he was a member.

DR. W. T. HARPER

Dr. W. T. Harper of Wake County, received his Medical Degree at the Jefferson Medical College in the class of 1920.

He served as intern one year at the Saint Agnes Hospital in Philadelphia, and afterwards practiced medicine in Charlotte, with Dr. John Q. Myers.

Ill health overtook him in the early years of his chosen profession. He had an operation for appendicitis in 1925, and never regained his health again but gradually weakened until the end came at Oteen Hospital, January 8th, 1927.

Dr. Harper was a young man of sterling character, and well qualified for his profession.

DR. WILLIAM J. HUNNICUTT

Dr. William J. Hunnicutt of Buncombe County, died September 6th, 1926.

Dr. Hunnicutt was a worthy member of the Buncombe County Medical Society, and since coming to Asheville, had been active and progressive in medical and civic affairs. He was a trusted family doctor,—a type of the old school, now rarely seen.

Fitting testimonial was paid him by the members of his County Society, in the following resolution:

"*Resolved*:—that in the death of Dr. Hunnicutt the Buncombe County Medical Society has lost an active, reliable and conscientious member; one who was loyal to the high ideals of the medical profession and loyal to honor and truth as he saw it. He was active and interested in all civic affairs that had for their object the uplift, the betterment and the happiness of his fellowmen."

At the time of his death he was councilor of this Society for the tenth district, and did valuable organization work and built up the profession in the tenth district in a splendid way during his tenure of office.

Dr. A. T. Pritchard, Asheville:

This afternoon I was asked to give a short obituary on my friend Dr. W. J. Hunnicutt. I have therefore not had time or means to get the details of his life. I shall just briefly state that Dr. Hunnicutt was obliged to adopt North Carolina as his home because of the illness of his wife, coming to Asheville about twenty years ago and locating there for that reason.

The older I get the more impressed I am as a physician with the important part organized medicine plays in this world. Organized medicine is the center around which the entire world revolves. All society, all law, all human efforts, depend upon organized medicine. I would say of Dr. Hunnicutt that he did all he could to uphold and maintain the traditions of organized medicine, and I hope that if anyone has the temerity to say anything about me when I am gone that same statement will be made in regard to me. I think the efforts of organized medicine are so beautiful and so unselfish in their ideals that there is nothing to be compared with them and it. I say Dr. Hunnicutt did all he could to uphold organized medicine. He was always present at the meetings of his county medical society, and I doubt if he missed a single meeting of our State Medical Society after he came to our state. After the death of Dr. Glenn he was elected councilor of the Tenth District, filling that position with distinction and giving his continued support to organized medicine in general.

Dr. Hunnicutt was different from many physicians in that he was intensely religious, and he spent a great deal of his time in religious work. I have heard him offer beautiful prayers. He was a devout and sincere Christian. Robert Burns, writing an epitaph on one of his friends, said: "If there is another world, he rests in peace; if there be none, certainly he has made the best of this." I can truly say that about Dr. Hunnicutt.

DR. ZORO KNOX JUSTICE

By M. L. Shipman

Dr. Zoro Knox Justice was born in Henderson County, near Hendersonville, N. C., February 22, 1872, and departed this life close to the place of his birth on February 12, 1927, his untimely death resulting from the accidental discharge of a gun while out hunting, which was one of his favorite pastimes. The remains were interred in the family cemetery on February 15, 1927, in the presence of a host of relatives and friends attesting the high esteem in which he was held by those who knew him best. The casket was borne to the grave by brethren of Ochlawaha Lodge No. 161 Independent Order of Odd Fellows, Hendersonville, of which he was an honored member, where an impressive service was conducted by members of Kedron Lodge No. 387 A. F. and A. M., with which he had long been connected.

Doctor Justice received his academic training at the old Blue Ridge Academy in the home neighborhood and completed a business course at Judson College, Hendersonville, receiving a diploma on June 2, 1892. Served in the capacity of bookkeeper for a large department store in that city for awhile before reaching the conclusion to take up a profession. Received instructions in medicine and dentistry from the leading colleges of North Carolina, Tennessee and Virginia. Secured license to practice dentistry during the year 1902 and graduated from Davidson Medical College in the spring of 1903. Took special course in medicine at other institutions and later passed successfully the Medical Board of Examiners for the State of North Carolina. In 1904 he became a Doctor of Optics by authority of the Philadelphia Optical College; on September 7, 1907, received a diploma from Haskell Post Graduate Dental College, Chicago, for the art of Alloy and Amalgam Making; in November 1912 was awarded license to practice medicine in the State of Florida; in 1917 completed course in Conductive Anesthesia and received diploma; in 1922 awarded diploma from the University of North Carolina for Pediatrics. He believed strongly in thorough preparation and consistently practiced what he preached. Possessed a happy, cheerful disposition and his death seems the ringing down of the curtain on an unfinished drama. However, each blade of grass, each leaf, each grain of sand has locked within its tiny breast a secret the most profound philosopher cannot fathom.

Doctor Justice may appropriately be classed as a versatile man and one who adherred to the doctrine of the "survival of the fittest." Not content with the extensive knowledge he had acquired of other professions he became a student of the law and obtained license to practice in the courts of North and South Carolina. The dental and medical professions occupied practically all of his time and he was mainly interested in the relief of the sick and the distressed. He was a fraternal man with a fraternal spirit, holding membership in the Mystic Shrine and Charlotte Consistory; Masonic (third) Kedron No. 387, Hendersonville; Knights of Pythias, Mooresville; Odd Fellows. Ochlawaha No. 161, Hendersonville; State Dental, Medical and Bar associations, and

the Dental Association of America. Was also a life member of the National Red Cross.

At the time of his death, Doctor Justice was Registrar of Vital Statistics for the town of Davidson and Deweese Township. He had previously served for a number of years as Health Officer for the town and, also, as a member of the Board of Aldermen. Was a member of the Baptist church and a strong believer in the Bible, of which he was a close student. Gave liberally of his substance to the church and deserving objects of charity at all times.

On August 20, 1905, Doctor Justice married Miss Cornelia Osborne, of Brevard, N. C., and three children have been born to them. Frank, the elder son, is a senior at Davidson College this year. Jennille, the daughter, and Zoro Knox, Jr., with their mother, also survive and our sincere sympathy is extended to them in their deep bereavement. From the creation morn down through the ages, man has been strengthened and comforted with the hope and belief that somewhere, sometime, we will meet our loved ones who have gone on before. Their silent lips may not answer, but others will speak for them, as we mingle our tears with those of the bereaved, lovingly recalling with them, the many admirable virtues of the departed.

DR. A. A. KLUTZ

Dr. A. A. Klutz, a prominent figure in the life of Chapel Hill for the last forty years, died Sunday, December 20th, 1926.

Dr. Klutz only practiced medicine a short while at Chapel Hill, devoting the larger portion of his life to his mercantile interest at Chapel Hill, where he numbered by the thousands the University students, who were his customers, and who now hold him in affectionate memory.

DR. ARTHUR E. LEDBETTER

Dr. Arthur E. Ledbetter, was born October 26th, 1860, at Jamestown, N. C., Guilford County.

His parents belonged to the denomination of Friends, and Arthur Ledbetter was educated in the public school of Jamestown, and at New Garden, now Guilford College.

He taught school for a short time, until his marriage in October 1884 to Miss Rhoda Elliott. Soon after his marriage he began the study of medicine with Dr. William Bradshaw, and graduated from the University of Maryland in April, 1888. He went before the State Board in May of the same year, and joined the State Medical Society.

In August of 1888 he began the practice of his profession in Caswell County. Two years later he moved to Greensboro, where he continued in active general practice until attacked by the disease which caused his death.

In 1898 he was elected superintendent of Health of Guilford County, which position he held for two years.

Dr. Ledbetter was quiet and unassuming in manner, but speedily won the hearts of all who were privileged to know and appreciate him, and had the esteem and affection of all his patients. He was fond of reading and study, and had a large store of general information, always ready

for use. He had written short biographical sketches of many of the physicians who had practised, or were practising in Greensboro, and Guilford County, some of which contain material which would be hard to secure elsewhere today.

Dr. Ledbetter died June 2nd, 1925 from an attack of general progressive paresis which began in September or October of last year.

He was an earnest Christian, a diligent student, and for years a teacher in the Sunday School, and died, as he had lived, in the hope of a glorious resurrection.

WHEREAS death has taken from us an esteemed friend and valued member, Dr. Arthur E. Ledbetter.

RESOLVED that while we mourn his loss, we can only bow with submission to the will of our Heavenly Father.

RESOLVED that this Society extends its heartfelt sympathy to the bereaved members of his family.

RESOLVED that a copy of this paper be spread on our minutes and furnished to the papers and to the family of Dr. Ledbetter.

(Signed) W. P. Beall

DR. R. H. LEWIS, M.D., A.M., LL.D.

Dr. R. H. Lewis of Wake County, died at his home in Raleigh, August 6th, 1926, after an illness of many months, at the age of 76 years.

Dr. Lewis was a pioneer state public health officer, and a leader of the North Carolina medical profession for many years. Probably no other man in North Carolina, during the last half century, did so much for the welfare of the whole people of the State.

Dr. Lewis held every office within the gift of the medical profession of North Carolina. He had also held every office in the State Board of Health. He was also president of the American Public Health Association, and at the time of his death was a member of the executive committee of the State Board of Health, in all of which positions he served with a credit to himself and to his profession and State.

Few men have been honored more in his profession, and none ever died with greater respect and esteem than was accorded him by the members of his profession, and there has been no worthier citizen, nor none more beloved by his friends than he.

Dr. W. S. Rankin, Charlotte:

Dr. Lewis, knowing the customs of this Society and knowing that sometime this meeting might be concerned, in this time-honored and beautiful custom, in paying tribute to his memory, said to me on a number of occasions that he expected me to do this last service to the Society for him. While it is a sad duty I assume it, as I assumed everything that he ever indicated to me was his wish, as a happy and high distinction.

RICHARD HENRY LEWIS

1850-1926

BY

Dr. W. S. Rankin, Charlotte.

Richard Henry Lewis, son of Richard Henry Lewis and Martha Elizabeth Hoskins Lewis, was born at Greenwreath, near Greenville, North Carolina, February 18, 1850, and died in his home near Raleigh, North Carolina, August 6, 1926. His body rests in the family plot in Oakwood Cemetery at Raleigh. Such are the annals, brief and simple, of a life through which there flowed a creative influence, lasting and varied.

Richard Henry Lewis began to live a long time before he appeared in the flesh at Greenwreath. He lived in and as a part of a vital current, an ancestral line, which even to limited human ken reached back to and conspicuously identified itself with the glorious beginnings of our country, with the great events of Colonial and Revolutionary history. He was no one-man-made man; he was the work of generations. Truly, he came trailing clouds of glory and fell into an environment which harmonized with the larger purpose of his heredity, an environment constructive in its circumstances and designed to unfold and to bring into play the fine inherent qualities of the child and youth.

Three circumstances of his childhood undoubtedly played a large part in the development and direction of his interests. First he was a widow's son, his father having been taken when he was but seven years of age. Second, disease came to him in his early years and left its mark and, doubtless, its impression for life. Third, his childhood was spent and his adolescence ripened into manhood at a time when war impended and raged and while its ugly wounds were still inflamed and tender. A mother's grief, a mother's solicitude, augmented because unshared, a mother's affectionate companionship, early personal suffering and physical handicap, and all at a time of great general trial and tribulation—these were the conditions, this the environment through which, by the Grace of God, his rich hereditary endowments burgeoned forth into a noble character and delightful personality.

Both his prenatal environment, usually referred to as heredity, and his postnatal environment worked together in developing a character in which sympathy, that understanding and concern of the one for the many, was the dominant quality. It was this dominant quality of his character that engendered his broad interest in life. It was his broad interest in life which garnered rich stores of knowledge for his mind. It was his well stored mind that served as the solid basis of an exceptionally well balanced judgment.

After attending the best preparatory schools of his time, the youth at the early age of sixteen, entered the University of North Carolina in 1866, and led his classes during his two years at the University, his student days at Chapel Hill being terminated by the closing of the University in 1868. In the fall of that year Dr. Lewis entered the University of Virginia and, after one year devoted largely to the study of Moral Philosophy and French, began the study of medicine in the

fall of 1869. Leaving the University of Virginia in 1870, he entered the School of Medicine of the University of Maryland, from which Institution he was graduated with the Degree of Doctor of Medicine, March 1, 1871. Dr. Lewis remained in Baltimore for two years following his graduation, first as resident and then as assistant physician in the University of Maryland Hospital. Returning to Tarboro, North Carolina, he engaged in general practice for a few months and then decided to specialize in the treatment of diseases of the eye and ear. For this purpose he returned to Baltimore and began his special studies under the guidance of Dr. Julian J. Chisholm, one of the great specialists of the earlier days of specialism. After several months with Dr. Chisholm, Dr. Lewis continued his special studies in the Royal Opthalmic Hospital of London, and returned to the United States to begin the practice of his specialty, in 1875, in Savannah, Georgia.

Dr. Lewis remained in Savannah but two years, when influenced, undoubtedly by her who became his wife, Miss Cornelia Violet Battle, of Raleigh, and drawn homeward by the contracting scar tissue of nostalgic wounds, he returned to Raleigh, in 1877, and there resumed the practice of his specialty, which he continued until but a short time before his death. Dr. Lewis was one of those true physicians who gave to his patients a generous equality of head and heart, and so his patients and his friends were one; they came from all sections of the State, and no other North Carolina physician has had a clientele so extensive in distribution and, at the same time, so inclusive of the finest types of North Carolina citizenship.

Dr. Lewis became a member of the North Carolina State Medical Society in 1877, the year in which he returned to the State. So easily and quickly did the Society recognize the outstanding work of the man that, in 1880, only three years after he joined the Society, he was chosen for one of its most responsible offices and coveted honors, namely, membership on the Board of Medical Examiners. This early judgment the Society reiterated and emphasized in 1890 by electing Dr. Lewis to its Presidency. In addition to these and other offices he served the Society for many years in the important position of Chairman of its Legislative Committee. In this position he found and used one of his largest opportunities for service. He was consulted frequently by governors and legislators, his considerate and tactful suggestions were always courteously received, and his advice invariably respected, and usually followed. In this position he was the major factor in determining questions of legislation and policy where medical and public health interests were involved. The records of this Society may be searched in vain to find, on the one hand, any legislative measures of any medical or sanitary importance that did not find in him effective support and, on the other hand, any measure harmful to the best interests of this Society that did not encounter his telling opposition. Your Transactions will not disclose a single instance where either his support or opposition to proposed legislation did not receive the endorsement of the Society. At the time his resignation as Secretary of the State Board of Health became effective in 1909, the Society went on record in a resolution as follows: "That this Society expresses its conviction that he

has done more, both in his official and individual capacity, than would have been possible for any other one to have done."

Lacking one year, his membership spanned a period of half a century. There were but three members of the Society, namely, Drs. W. I. Royster, Charles E. Moore, and James W. McNeill, who, at the time of his death, were his seniors. In length of service he had but few peers; in fullness of service he had none.

In the lives of the great there is discernible, in magnified form, and, therefore, more clearly than in lives of smaller orbits, the work of the unseen hand, giving purposeful relation to man and circumstance. So it was that the time of the beginning of the professional career of Dr. Lewis, 1871, synchronized with the great work of Pasteur, which established the infectious nature of disease and laid the sure foundations on which the structure of preventive medicine has been builded, with the work of Koch, who confirmed the work of Pasteur, simplified his methods and made them generally useful, with the work of Lister, who made practical application of the principles of Pasteur and Koch and so gave birth to modern surgery. Under the teachings and inspirations of these three, great Frenchman, great German, and great Englishman, the high tribute of preventive medicine, his early professional interests were bent strongly in the direction of that larger phase of medicine, public health.

Another interesting conjunction of man and circumstances: The beginning of Dr. Lewis' membership in the Society was synchronous with the organization of the State Board of Health in 1877. It may be recalled that three years after he joined the Society, in 1880, he was elected to membership on the State Board of Medical Examiners. While a member of the Board of Examiners he was not eligible to another office. His service with the Board of Examiners ended in 1884, and the next year, in 1885, he was elected to membership on the State Board of Health, a position which he filled for forty-one years, death terminating his tenure of office. In 1892, one year after his retirement as President of the State Medical Society, and following the death of Dr. Thomas A. Wood, the founder and first Secretary of the North Carolina State Board of Health, Dr. Lewis was elected Secretary of the Board, a position which he held for seventeen years, until 1909.

As a public officer, being a man, as has already been set forth, of great human sympathy, he understood and appreciated the viewpoint of others. He was considerate of the finer, more delicate feelings of people, and tactful in his dealing with them, an officer, truly, but always a gentleman to the manner born. He had implicit confidence in the inherent desire of people to do right when any mental or moral astigmatism was corrected. He put his trust not in law, but in life; he never drove; he always, and everywhere, led,—led patiently, and not too fast, realizing that to move too rapidly and too far in advance of new ideas that in their infancy must crawl and walk would be to find himself without a following. In leading the people to new conceptions of right and wrong, to a more abundant life, he used the only means available in a democracy, namely, education. The development of public sentiment through education was the governing principle of his administration.

The large amount of educational work which he carried on through district conferences, public meetings, and especially through the regular monthly issues of the Bulletin of the State Board of Health, is, unquestionably, the true explanation of the enviable position in public health work which North Carolina early achieved under his able leadership and has persistently held under his guiding influence.

Complete records of his seventeen years' work as Secretary of the State Board of Health are contained in the Annual Reports of the Secretary of the Board to the State Medical Society, which are a part of your TRANSACTIONS, and in the Biennial Reports of the Secretary of the Board of Health to the Governor, which are a part of the permanent official records of the State. Only the more notable achievements of his administration will be listed here. First, should be noted the extensive educational activities which led to an intelligent public interest and popular support of public health work. This was primary to all of the other important achievements of his official career. Second, the beginnings of the State Laboratory of Hygiene were made in 1896, when regular examinations of samples of public water supplies were begun. This led to the establishment of the Laboratory in 1905 with the more complete organization of its work under its present able director, in 1907. Third, the initial steps towards the present efficient sanitary engineering service of the Board were taken in 1896, and by 1909 the engineering service of the Board had so developed that it was adjudged by national authorities to be in a class with that of only two other states. Fourth, as a result of the educational work incessantly carried on, and as a result, perhaps, of a special interest which he had in tuberculosis, a movement began which was ably pressed by the late Dr. J. E. Brooks and others, and which resulted in the establishment of the State Sanatorium for Tuberculosis in 1907. Fifth, Dr. Lewis secured the enactment by the general assembly of 1909 of what officers of the Bureau of Census of the Federal Government referred to as "the first practical vital statistics law enacted in the South." This was the initial step leading up to the enactment of the more inclusive and model vital statistics law in 1913, with the admission of North Carolina along with only one other Southern state to the Registration Area in 1915. Sixth, in 1909, Dr. Lewis secured legislation which made possible the purchase of diphtheria antitoxin by state contract at greatly reduced wholesale rates, at which rates, about one-fifth of its former cost, antitoxin was made available to our people. Seventh, through his alert interest, North Carolina was the first Southern state to undertake active measures for the control of hookworm disease, and among the first states of the South to recognize pellagra as an important public health problem. Eighth, he secured the enactment of legislation by the General Assembly of 1909 which made statutory and fiscal provisions for a full time Secretary of the State Board of Health, and resigned his position as Secretary July 1, 1909, in order that the Board might elect as a successor someone who could devote his entire time to its interests.

Dr. Lewis' large and intelligent interest in public health work, coupled with his wise and tactful handling of public problems, soon

placed him in a position of leadership which was by no means provincial. His opinions and advice were sought and followed in all important national programs for the improvement of public health. He was one of the best known and most respected of that early group of pioneers that awakened the national conscience to its larger obligations and opportunities in the conservation and improvement of human life. In the dawn of the public era, Richard Henry Lewis was, in every sense, a major prophet. In 1905, he was elected President of the Conference of the State and Provincial Boards of Health of North America, the most influential organization of health officials in the world. In 1907, he was elected President of the American Public Health Association, the largest organization of individuals and agencies, official and unofficial, interested in public health in the world, being composed of health officers and teachers of public health and research workers in the colleges and universities of the United States, Canada, Mexico, and Cuba. In 1924, Dr. Lewis was elected an Honorary Fellow of the American Public Health Association. And so he was appreciated and respected throughout our great country, as he was known and loved in his own State.

The size of a man is determined by the breadth of his sympathies and is expressed in the variety and character of his interests. If this principle is sound, Dr. Lewis was a man of exceptional proportions. His interests were not only sufficient to meet every demand and opportunity for service which both his profession and his public office presented, but over and above that he had a large surplus of interest which he contributed to other agencies engaged in human betterment.

To education he gave as few give. For thirty-five years he served as a Trustee and as a member of the Executive Committee of the University of North Carolina. The University, in all of its long life, has had few friends who have rendered it a larger service and none more devoted to its interests. For thirty-three years he was one of the most interested and active members of the School Committee of Raleigh Township. One of the large and handsome school buildings of his City, the Richard H. Lewis School, memorializes this service. For twenty-three years he was a most helpful Trustee and member of the Executive Committee of St. Mary's School, Raleigh, the Episcopal Diocesan School for Girls of the Carolinas. For thirty-two years, as Trustee and member of the Executive Committee of St. Augustine's Normal School of Raleigh, he served the cause of education of colored youth. For twenty-eight years he gave further service in the educational work of negroes, serving as Professor of Diseases of the Eye and Ear in Leonard Medical School, a department of Shaw University, Raleigh. For seven years he was Professor of the Diseases of the Eye and Ear in the Medical Department of the University of North Carolina, which was located at Raleigh. Here is, in all probability, a record of service to the cause of education unmatched by any other citizen of the State who has not been actively engaged in teaching or in the supervision of teaching.

With an interest still unexhausted he found other channels for unselfish service. He drafted some of the first legislation for the improvement of North Carolina roads. While Chairman of the Street Com-

mittee of the Raleigh Board of Aldermen he was responsible for the use of the first road machine used in the State. He introduced the cream separator in North Carolina. For many years he was a member of the Board of Directors, and since 1916, Second Vice-President of the Citizens National Bank of Raleigh.

Of special interest was his relation to his church—that reservoir into which has flowed and in which is stored that water of which if one shall drink he shall never thirst. Here was the inspiration of his spirit; here was the inexhaustible strength of his generous life. Since 1888, he served as Senior Warden of Christ's Church, Raleigh.

Dr. Lewis was married three times. To Cornelia Violet Battle, he was married February 13, 1877. His first wife died in 1886, leaving four children, Richard Henry, Martha Battle, Kemp Plummer, and Ivey Foreman Lewis. His second wife was Mary Long Gordon, to whom he was married April 16, 1890. His second wife died August 30, 1895, leaving a daughter, Cornelia Battle Lewis. His third wife was Mrs. Annie Blackwell Foreman, to whom he was married October 27, 1897. His third wife died October 30, 1917.

Man's first and grandest conception of God is that of creative power—creative power which reached its zenith in the creation of man and imparted to him as a seal of approval the divine likeness. And so it is and so it has always been that the God-like are those of creative imagination and constructive thought. Richard Henry Lewis, in his higher nature, in the bent of his spirit, bore this likeness to his Father. It was divine nature asserting itself in his life that willed that men should live longer and better and have fuller opportunity to express their own God implanted creative instincts in making this world conform ever more and more to the divine will and purpose. It was and is his invisible spirit that has stood and that stands like a guardian angel between death and not hundreds, but, verily, thousands of North Carolina homes—homes whose family circles are unbroken today because of him, homes where fathers, absent but for him, provide for their families, homes where mothers, absent but for him, support and guide the steps of happy childhood, homes where children, absent but for him, prattle and make glad the hearts of parents. It was an old Roman philosopher who, expressing the thought that to save life is close akin to creating life, said "They are next to the gods who give life to other men."

Elbert Hubbard, in his wonderful description of that great tragedy of the sea, the sinking of the Titanic, pictures William T. Stead, the English writer and thinker, standing on the deck of the ship, now rapidly settling, his handsome, gray bearded face turned upward, his gaze fixed upon the shining, twinkling stars, God looking earthward and in pardonable pride saying to Gabriel, "Here comes a man!" And so I like to see him as spirit greeted spirit last August 6th, crutches set aside, the strong, handsome, gray bearded face turned upward, God looking earthward and seeing in that face his own reflected likeness, saying to Gabriel, "Here comes a man!"

*RICHARD HENRY LEWIS, M.D., LL.D., F.A.P.H.A. (Hon.)

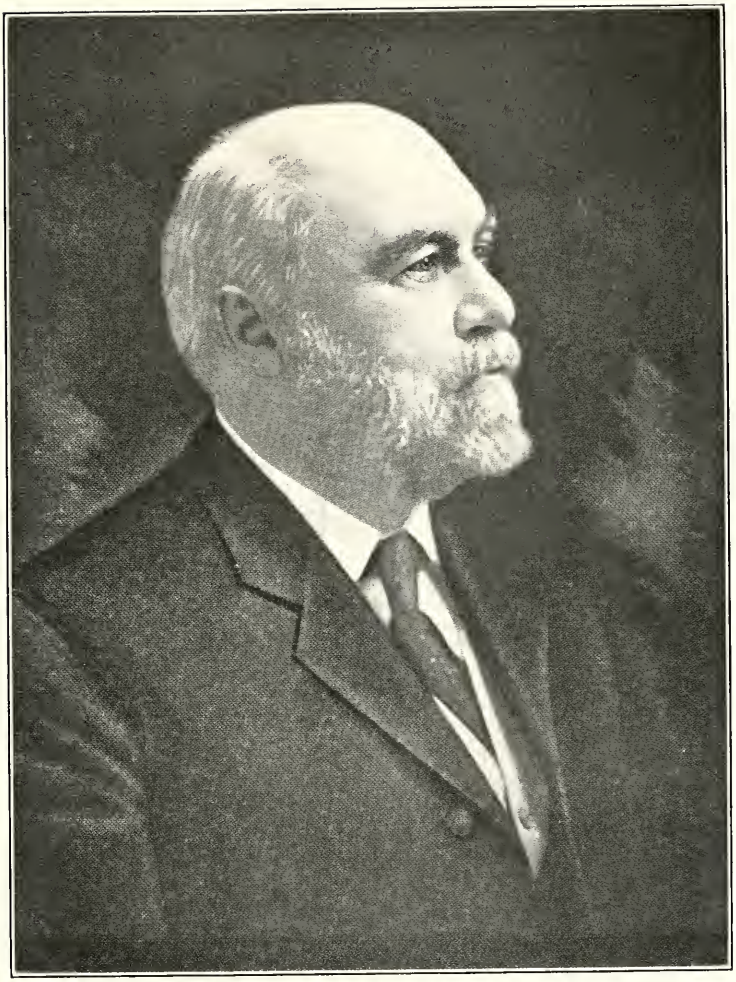
An Appreciation

J. Howell Way, M.D., F.A.C.P., Waynesville.

Richard Henry Lewis,—peculiarly gifted citizen, skilled physician, successful teacher, eminent sanitarian, wise counsellor, loyal friend,—first saw the light of this world at Greenwreath, on the Tar River, eight miles from Greenville, North Carolina, on February 18, 1850. He was the only son of Richard Henry Lewis and Martha Elizabeth Hoskins Lewis. Paternally he was descended from Col. Exum Lewis, of southeastern Virginia, who settled in Edgecombe County, North Carolina, about the middle of the eighteenth century, and was colonel of the militia in that county during the War of the Revolution. His son, Exum Lewis, the grandfather of the subject of this sketch, was an extensive planter and merchant of Edgecombe County. Richard Henry Lewis, the father of Dr. Lewis, died when his talented son was only seven years old. Maternally, Dr. Lewis was descended from George Durant, who removed from Virginia about 1658, settling in what is known as Durant's Neck, Perquimans County, on the Albemarle Sound. One of his maternal great-grandfathers was Joshua Skinner, also of Perquimans County, who married Martha Ann Blount. Another maternal great-grandfather was Richard Hoskins, a bold and zealous patriot, and a citizen of much influence during the Revolutionary War. His was the first name signed to the famous patriotic, "Resolutions of the Vestry of St. Paul's," at Edenton; and his wife, Winnifred Wiggins Hoskins, was the secretary of the "Edenton Tea-party," when the ladies of the community assembled and solemnly pledged themselves to no longer use tea because of the attitude of Great Britain toward the American Colonies. From this most worthy pair of patriots descended Martha Elizabeth Hoskins, who wedded Richard Henry Lewis and to whom was born the distinguished son of whom we write.

Shortly after the death of the father, the family removed to Tarboro, North Carolina, where Dr. Lewis spent his youth, and attended the Owen School, the Tarboro Male Academy, and later Prof. R. H. Graves' justly famous School for Boys in Granville County. Matriculating at the University of North Carolina at the age of sixteen years in 1866, and returning in 1867, the young man,—though physically handicapped from early youth with a tuberculous hip, which sent him through life on crutches,—was soon recognized as a leader of men, and achieved the first honors of his classes through the sophomore year at Chapel Hill. With the closing of the University of North Carolina in 1868, he entered the University of Virginia, took diplomas in Moral Philosophy and French; and the following year began the study of medicine in the same institution. In 1870 he attended the School of Medicine of the University of Maryland, receiving the degree of Doctor of Medicine on March 1, 1871, in the same class with the afterward distinguished Dr. George Gillett Thomas, of Wilmington, his life-long and intimate friend, as well as his eminent colleague on the North Carolina State

*Presented at the Annual Meeting State Medical Society, Durham, N. C., April 20 by invitation of Chairman Committee on Obituaries.



Rich. H. Lewis

Board of Health from 1892 to 1911. After receiving his doctorate in medicine, Dr. Lewis remained in Baltimore continuing the study of his profession for two years, during which time he served as a resident, and later an assistant physician, in the University Hospital. In 1873 he returned to North Carolina and located at Tarboro to engage in the practice of general medicine and surgery. Four months later he decided to specialize in the diseases of the eye and ear. For the work of his specialty he fitted himself by further study in Baltimore, under the direction of Dr. Julian J. Chisholm, a native of Charleston, South Carolina, and the author of the "Manual of Military Surgery for the Use of the Surgeons of the Confederate States of America," who, removing to Baltimore after the close of the War Between the States, attained a nation-wide distinction as one of the most celebrated and skilled of American oculists. On leaving Baltimore, Dr. Lewis continued his professional studies in the Royal Ophthalmic Hospital, Moorfields, London, England, and in 1875 engaged in practice as an oculist and aurist in Savannah, Ga., where he soon attracted a wide clientele, and became the teacher of his specialty in the Savannah College of Medicine and Surgery.

Marrying in Raleigh, in 1877, he removed to that city, took the examination before the North Carolina State Board of Medical Examiners, united with the State Medical Society on being licensed, and from that day to the end of his life, it may be truthfully said, no physician or surgeon more than he, graced the profession, or the society, by his life work. In assuming the duties of an oculist and aurist in North Carolina, located at the capital city, Dr. Lewis very soon became widely and favorably known, attracting a large clientele, much of which had formerly gone to Richmond and Atlanta specialists.

In 1886 Dr. Lewis associated with him in practice his talented brother-in-law, the late Dr. K. P. Battle, Jr.—a fortunate partnership of kindly and kindred spirits, lasting to the end of Dr. Battle's life in 1922. In 1915, Dr. Lewis, following his life policy of association with young and active men of the profession, associated with himself in practice Dr. John B. Wright, formerly of Lincolnton, N. C., and again later in 1922 another worthy addition was made to the firm in the person of Dr. V. M. Hicks. (Governor Angus W. McLean paid both Dr. Lewis and the appointee, a noteworthy compliment, when a few days after the death of Dr. Lewis, the Governor appointed Dr. Wright to fill the vacancy on the State Board of Health resulting from the passing of Dr. Lewis.)

Recurring to Dr. Lewis' earlier years in the profession, it is worthy of remark that immediately on his accession to the State medical society, he assumed a position of helpful and constructive activity. The year after joining, he reported instructive cases of cataract, corneitis, and amblyopia. In 1879 he presented an admirable paper on "Spectacles in Youth," unhesitatingly combating the prevalent professional and lay objections, and stressing the distinct therapeutic value of glasses for young people. The same year he was appointed chairman of the newly-created Section on Ophthalmology and Otology, presenting to the 1880 session its first report; a report, and an admirable resume of

some of the things many practitioners could give studious thought to now with informing advantage. In 1880 Dr. Lewis was elected to fill a vacancy on the State Board of Medical Examiners, serving to the end of the term in 1884. Six years later he was chosen president of the State Medical Society, and his "President's Address," at Asheville in 1891, was a masterful presentation of the things most pertinently concerning the state's medical profession of that period, and expressed intelligently the better thought relative to the establishing of a diploma conferring school of medicine in North Carolina. *En passant,* it is of interest at the moment to note, that the same progressive and constructive institution (Trinity College, now Duke University) which had some weeks prior to the annual meeting of the State Medical Society at Asheville in 1891, "called a conference of some of the leading medical men of North Carolina to discuss measures to elevate the standards of medical education in this state," is now preparing to open a complete college of medicine of the highest grade, wholly fulfilling the requirements of the State Medical Society at the 1891 session, as evidenced in President Lewis' address, and the resolutions adopted as reported by the Committee on President's address, to-wit: "With ample endowment to pay the salaries of the professors and all the expenses, without in any way depending upon the fees of students; and whose graduates should be abundantly able to meet all the requirements of the State Board of Medical Examiners."

The proprietary medical school about this period was in its zenith of activity; and it was the thoughtful guidance of Dr. Lewis, functioning through the legislative committee of the State Medical Society which easily put to rest without legislative action, the proposed charter for the Western North Carolina Medical College to be located at Asheville, though sponsored by some of the most excellent medical gentlemen of that city!

In 1892, the death of the distinguished Dr. Thos. F. Wood, of Wilmington, the founder of public health in North Carolina, and the Secretary of the State Board of Health from its organization, in 1877 (the year Dr. Lewis returned to his native state and resumed practice in North Carolina) to his death, created a vacancy and Dr. Lewis was unanimously elected by the members of the board as Dr. Wood's successor. As secretary of the State Board of Health for the ensuing seventeen years Dr. Lewis exercised a most potent influence for public health development inside the ranks of the medical profession, with the public at large, and as the continuing efficient chairman of legislation in the halls of the state capitol, never surpassed, if indeed equalled in this or any other state. Realizing thoroughly in the incipiency of his occupancy of the office of Secretary of the Board of Health, that enduring results could only come through the educated appreciation of true values to accrue, and believing in the governmental theory of leading, rather than forcing public sentiment, he resolutely set himself to the difficult task of creating in North Carolina an atmosphere favorable to the growth of intelligent and constructive health policies and legislation to render such policies effective. With a state population at that time around ninety per cent rural, plus an annual legislative appro-

priation for state-wide health work of a sum considerably less than an average North Carolina county now expends for such purposes, it would seem that this was an undertaking only for a super-man, but Dr. Lewis had his ideal, and though the goal seemed doubtless far away, he never faltered. He secured in 1896 the initial arrangement for an examination of public water supplies; later, in 1905, with the meager annual appropriation of $1,200.00, the foundation was laid for the work of the State Laboratory of Hygiene; and still later, larger appropriations were secured, the scope of its activities enlarged until today, under the able administration of Dr. C. A. Shore (one of Dr. Lewis' admirable findings of the "right man for the place") this state ranks as one of those operating one of the most efficient public health laboratories in America. In 1896, the services of a sanitary engineer were added by Dr. Lewis, and this feature of the work elaborated until in 1909 the State of North Carolina ranked as one of the three states having effective regulations for the control of its public water supplies. Writing, as he constantly was, a variety of articles for the monthly health Bulletin, and the public press in general, he by no means neglected the tuberculosis problems, and in 1906 was one of the leaders in the organization of the North Carolina State Association for the Study and Prevention of Tuberculosis, from which doubtless came the inspiration of Dr. J. E. Brooks promoting the initial legislation for the establishing of the State Sanatorium for Tuberculosis. This Association honored itself and Dr. Lewis by electing him president in 1912.

In 1909 the long-cherished desires of Dr. Lewis found tangible expression in the legislature's enacting what the Federal government through its Census Bureau was pleased to refer to as "the first practical vital statistics law enacted in the South." At first this statute only applied to towns in excess of 1,000 population; but, under the stimulus of educating the public to its health needs as he went along, in 1913 the legislature made the law applicable to the entire population, and in 1915 North Carolina, with a single other Southern state was admitted to the United States Registration Area.

With his guiding brain to suggest, the General Assembly of North Carolina, in 1909, passed the law which placed diphtheria antitoxin within the reach of every sick child in the state. Following the visit of Dr. Chas. W. Stiles, made on the invitation of the then secretary of the North Carolina State Medical Society, to the annual meeting of the society held at Hot Springs, N. C., in 1903, where was given by Dr. Stiles his second demonstration of his belief of the widespread existence of hook-worm infestation in the South, Dr. Lewis very promptly assumed his usually intelligent and progressive attitude toward all public health problems, with the result that North Carolina was the first state in the South to undertake active measures for the control of uncinariasis—a "by-product" of this progressive work was the discovery by the International Health Foundation that, "the man in North Carolina who supervised the field work of the hook-worm campaign was a most efficient young sanitarian," and while the North Carolina State Board of Health lost one of its most valued of Dr. Lewis' discoveries,

Dr. John A. Ferrell became one of the International Health Board's useful leaders in its international efforts to better the health conditions of the world. Dr. Lewis was one of the first state health officers to recognize in the prevalence of pellagra, a public health problem, and to secure the appointment of a commission for its study.

By 1909, Dr. Lewis fully recognized that the work of the secretary of the State Board of Health had so far extended beyond the confines of its possible activities when he assumed the function of the position seventeen years before, that a full-time official was absolutely essential to the furthering of the work as planned; and with his remarkable success in convincing the General Assembly of the wisdom of his requirements in all his recommendations for health service, he saw enacted into law provisions for increased appropriations, and a requirement for the full time of the secretary. His goal had been reached and he retired from the office in which he had won local, state, national, and international fame, as a great public health administrator, being succeeded by the young man of his choice, Dr. W. S. Rankin,—the professor of Pathology in the Wake Forest School of Medicine,—to whom that most eminent of American pathologists, Dr. Wm. H. Welch, had referred some three years previously as a "most capable and efficient young man of much promise."

Dr. Lewis was a many-sided man, and in every avenue of life he found something to interest him, and opportunity to serve his fellow man. Though a busy specialist, he yet found time to be a constructive leader. His dairy farm near Raleigh was a model in its time, and he placed on it the first centrifugal cream separator brought to the state. In 1884, as Chairman of the Street Committee of the Raleigh Board of Aldermen, he was responsible for what is said to have been the first road machine operated in the state, and it was his privilege to aid in drafting some of the first legislation for the improvement of rural roadways in North Carolina. To his credit stands upwards of thirty years' service as trustee of the University of North Carolina, and for a long time he was president of the State Audubon Society. For thirty-three years he served as member of the local school board in Raleigh, and the "Lewis" High School in that city attests the respect and affection won by him in that service. St. Mary's School for Girls, the Episcopal Diocesan College of the Carolinas, received at his hands, not only substantial aid, but more than twenty years of service as trustee. Thirty years he served as trustee and executive committeeman for St. Augustine's (Episcopal) Normal School for colored youths of both sexes. Twenty-eight years he gladly served as Professor of Eye and Ear Diseases in the Leonard Medical School for Negroes at Raleigh. For seven years, while the University of North Carolina carried on a portion of the work of its Medical School at Raleigh, he taught the same branches of medicine as in the school for colored doctors. Of him it is truly said: "he loved his fellow man!"

His reputation as one of the greatest living American public health officials found delicate appreciation at Washington, D. C., in 1905, when he was elected president of the Conference of State and Provincial Boards of Health of North America. Again his unanimous

election to the presidency of the American Public Health Association, the largest and most influential health organization in the world, including as its membership does, representatives of the vast expanse of territory from Panama and the West Indies to the North Pole; and only recently though long retired from active executive or organization responsibilities in public health work, the same organization attested their appreciation of Dr. Lewis' great life work by electing him honorary fellow of the American Public Health Association. The University of North Carolina, in 1912, honored itself and Dr. Lewis by conferring the honorary degree of Doctor of Laws; on which momentous occasion, the dean of the graduate school of the University, after recounting the many and varied distinctions attained by Dr. Lewis, concluded with the words: "Distinguished above men for a rare charm of personality, for excellence as a physician and teacher of medicine, and above all, for a long and valued service in the promotion of public health." Appreciated for his personal worth, respected for his integrity and fine business judgment in material things, Dr. Lewis was ever in demand, and it is not surprising to chronicle the fact that for many years he served as a director and officer of one of the state capital's largest and strongest banks. He was a member of the Chi Psi college fraternity, a Democrat in politics, and a life-long efficient and consecrated communicant of the Protestant Episcopal Church, frequently attending the State Convention where he was ever the attractive center of admiring friends, as he was when attending a medical meeting.

Dr. Lewis was married three times. On February 13, 1877, to Cornelia Violet Battle, of Raleigh, who bore him four children—Richard Henry, Martha Battle, Kemp Plummer, and Ivey Foreman Lewis. Her death took place in 1886. April 16, 1890, to Mary Long Gordon, who died August 30, 1895, leaving him a daughter, Cornelia Battle Lewis. On October 27, 1897, he married Mrs. Annie Blackwell Foreman, who died October 30, 1917.

At different times over many years Dr. Lewis was confined to his bed for varying periods of a few days, weeks or months; and the last two years of his life were evidenced by increasing activity of his disease with the result of practically invaliding him at home much of the time. Yet he bravely maintained at all times his never-flagging interest in, and concern for the various affairs of life, always greeting with pleasurable interest the friends of his business and professional associations who constantly insisted on continuing to have the benefit of his advice. The writer recalls with pleasure his continued participation in the affairs of the State Board of Health, and his keen interest in the selection of a suitable successor to Dr. Rankin, as secretary to the State Board of Health, his frequent conferences with him thereon, and the concern manifested, July 21, 1926, when being advised of the board being convened in special session to elect a secretary, requested that he be permitted to cast his vote for Dr. Chas. O'H. Laughinghouse for secretary, —his last official act in seeking to further the health work of North Carolina, which he had carried so close to his heart so many years.

His work was finished. A kindly Providence had permitted him to live his fruitful more than "three score years and ten"—years char-

acterized by kindly and unceasing devotion to improve every opportunity to serve his fellow man, to help brighten and bless the world about him, and crowned him with the choicest honors of his profession! With a goodly appreciation of what life had been to him, with the tender sympathetic regard of thousands who knew he would probably never get out again, his body racked with pains patiently borne, daily his decreasing store of what had once been a superb endowment of spiritual resistivity to discomforting influences; brought him nearer the end and he waited for the coming of the boatman with an almost yearning desire—This Grand Old Man of Carolina Medicine! And on August 6, 1926, gently, sweetly, quietly, his spirit passed to the shores of eternity.

A perfect day in Carolina was August 8, 1926, when there was enacted the closing scene in the career of this great and good man, when his life-long friend, Bishop Joseph Blount Cheshire, amid an immense throng of citizens of Raleigh, Durham, Chapel Hill, Tarboro, Greenville, Goldsboro, and other Carolina cities and country places, too, with beautiful simple rites, consigned his body to its resting place among the remains of loved ones gone before in Raleigh's cemetery.

Richard Henry Lewis, the gentleman of ever kindly, courteous mien, the great and good man, the wise and skilled physician, the outstanding medical statesman of his generation in North Carolina, the loyal and patriotic citizen, the friend of humanity, lives with us now and forevermore with a record written unfadingly in the history of his native state and in the hearts of those who knew and loved him; of him it may be truly said as Kipling wrote of the passing of Lord Roberts: "Clean, simple, valiant, well beloved, flawless in faith and fame, whom neither ease nor honors moved a hair's breadth from his aim."

Dr. John B. Wright, Raleigh:

Being associated with Dr. Lewis for a number of years, I should like to say that no man had an opportunity to know him better. It was the unselfish and high, the noble and great, that dominated every move of that great man and made him so influential in the life that he lived. There are in every man two natures that differentiate him from lower animal life—that which is high and noble and great and spiritual, and the other, which is low and earthly and carnal. These two natures are at war in our lives, the one with the other; and it was the ability to be dominated by the high and the noble and the unselfish, laying aside what is carnal and what is personal and what is fleshly and looking to what is eternal and what is high and just and good, that made Dr. Lewis the wonderful character not that he was but that he is, for he is not dead but liveth. And he was not made as my good friend Dr. Rankin said, by generations handed down; no, he was made by a faith in God that makes him what he is, a spirit that is noble and high and good. One of the greatest honors that has ever been brought upon me—yes, the greatest—was to be taken into his office, not as his understudy, for Dr. Lewis was too magnificent for that, but as his full-fledged partner and companion and adviser, so noble, so big, so great was Dr. Lewis, so ready to take the little fellow up and make him feel that he is a

man, to reach out and make him take hold of life in a manner that is uplifting and ennobling and good. It was a privilege, and I say it advisedly, to live with and be associated with and commune with this noble and great character. As Dr. Rankin said in closing his remarks, he was a real man; he was a man who could lay down, as I lay down this piece of paper, his personal desires and wishes and discuss impersonally whatever questions might come up; he could lay aside his personal desires and wishes as no other man I have ever known.

One of his greatest gifts, his ability as an entertainer, Dr. Rankin did not touch upon. I should like to relate the story of a little incident that happened the last time Dr. Lewis went away from Raleigh to a medical society meeting. I went with him and helped him on the train, and he said: "John, this will be my last time, I reckon." We were going to Charlotte, and the train was late. The connections were bad, and we had an eight-hours' wait in Hamlet. The grand, unselfish man, the oldest of us, when the rest of us were nodding and complaining, gathered us around him, as I can imagine our Saviour gathered His apostles, and for four hours he kept us amused and entertained as no other man I know could have, making us forget our wait and really enjoy it—all in spite of his age and infirmities. I think it is marvelous.

Dr. Rankin mentioned the many rewards of his service. May I say it was not with sadness but with feeling of gratification that Dr. Lewis laid aside the infirmities of the flesh and the pains of the flesh and is now enjoying the real reward of a life of happiness and peace and joy in eternity.

Dr. E. J. Tucker, Roxboro:

Please allow me a few words in memory of my good friend, Dr. R. H. Lewis. I had the privilege and pleasure of serving on the State Board of Health with him for many years, and no flow of language can express my opinion, appreciation and love for him. He was tenderly, advisedly my friend. He was a friend to man, and I can say nothing better of him than that he was a real Christian gentleman, "and never caused a tear but when he died."

DR. JOHN W. LONG

Dr. John W. Long, of Guilford County, aged 68 years, a noted physician and surgeon, died at his home in Greensboro, August 1st, 1926, from an attack of angina pectoris.

Dr. Long had a wide reputation as surgeon and was a veteran of the World War, enlisting at the age of 59, and was instrumental in the formation of Base Hospital, No. 65, serving overseas with the rank of Lieutenant-Colonel.

He was active in all the sessions and affairs of the North Carolina Medical Society and held the confidence and esteem of the members of this Association, and served as president.

He was a man of exceptional character, pleasing in his address, gentle in his manner, winning and meriting the confidence and the es-

teem of his fellow members. His judgment was good, and his heart was always right.

Few men with the opportunities presented him attain the prominence which came to him through his long service and devotion to the practice of medicine.

His moral character was above reproach and no man doubted his rugged honesty.

He was a member of the Methodist Church in Greensboro and for many years was Superintendent of the Sunday School.

His death is a distinct loss to the North Carolina Medical Society.

DR. JOHN WESLEY LONG OF GREENSBORO, N. C.

By C. W. Banner, Greensboro, N. C.

Dr. Long, during a life of great usefulness, won for himself in his profession a place of acknowledged leadership. Learned in his profession, of sound judgment, skilled in execution, and with the courage of his conviction, few were his equal as a surgeon.

A man dying may bequeath his gold and silver, his real and personal property, but unfortunately he cannot bequeath his knowledge and skill and his trained judgment and dexterity. What an inheritance this would have been had the subject of this sketch been able to bequeath to someone all these qualities.

Dr. John Wesley Long was born at Long's Mill, Randolph County, North Carolina, January 10th, 1859. Died at Greensboro, N. C., August 1st, 1926, and was therefore in his sixty-eighth year. Not old in years, but old in accomplishments. He was a son of Dr. Wesley Long and Mrs. Margaret Troy Long, and although his father died when Dr. Long was only six years of age, he had lived long enough to instill into the life of his young son a love for medicine, and it was not long before he had made his decision to eventually follow in his father's footsteps.

His father had been a country practitioner where the work was arduous and the remuneration small, so with a rather large family to take care of, he left little to help in the education of his son; so it was a rather formidable undertaking for this young boy, to educate himself, and to get his medical training. All of you who knew him, however, know that he never stopped, or even slackened his pace in the face of obstacles, and the accomplishments of his life will show how well he overcame the difficulties as he encountered them.

Dr. Long attended the public and private schools of his community, later attending the school at Pleasant Garden, N. C., which was being taught by a relative of his, and still later attended the private school of Miss Lina Porter in Greensboro, N. C. (Another genius to the credit of Miss Porter's school.)

Dr. Long early showed evidence of his fondness for medicine and surgery, and it is told of him that, as a boy, he went around with his pockets filled with strings and clean rags ready to administer to the wounds of any man or animal in need of such service. As was the custom in that day, he read medicine under a *preceptor* (Dr. Miller of

Dr. J. W. Long

Goldsboro, N. C.). Here he got his preliminary training in medicine, and I might also remark that while here he was a roommate of our late lamented and beloved Governor, Charles B. Aycock; and it was also while here that he first met and made an enduring friend of the Honorable Josephus Daniels.

Dr. Long next went to Nashville, Tennessee where he became a student in the Medical Department of Vanderbilt University and graduated from this Institution in 1883, later taking one year at the University of Nashville, Tennessee, and was given a diploma from this University in 1884.

After his graduation he soon located at Randleman, N. C., where he was stationed for about eleven years. It was here that he met, wooed and wed Miss Mary Eliza Woollen, a daughter of Dr. W. A. Woollen of that place. To them were born four children, one died in infancy. The other three are Mr. Wyeth W. Long and Mrs. C. D. Benbow of Greensboro, N. C., and Mrs. August Klipstein of New York. These together with the widow survive.

Dr. Long early in his career showed marked ability not only as a practitioner, but as a teacher, and it was due to this that he was offered and accepted the chair of Gynecology and Pediatrics at the Medical College of Virginia. This necessitated his moving to Richmond where he labored and taught for four years. He then came back to North Carolina and was for the next four years associated with Dr. John Whitehead, and they established and operated what was known as the Whitehead-Long Sanitarium, Dr. Long doing the surgery for the institution.

Dr. Long moved to Greensboro, N. C., in 1903, and continued to reside there during the remainder of his life. He was instrumental in opening the Greene Street Hospital, the first hospital to be opened in Greensboro. When St. Leo's Hospital was opened in 1906 he joined forces with them, and was the leading surgeon there for eleven years or until he opened the Wesley Long Hospital, a private institution of about thirty beds. His practice and prestige grew rapidly and soon he saw the need for more room in his institution. So in 1925 he began the erection of the Annex to this institution. It is a model hospital of its size and I doubt if its equal is to be found anywhere; he had taken great pains and had spared no expense to make it an ideal hospital, but unfortunately his untimely death prevented his seeing its completion although it would have been ready for occupancy within four weeks if he could have been spared.

Dr. Long early in his career showed a preference for surgery and, while there were no post graduate schools giving special training in that branch of practice, he was able from his own experience, and from frequent trips, close observation and study of the masters of surgery in the big clinics, to perfect himself in this branch; and I am sure all will accord him the distinction of being one of the leaders of the whole country in his chosen specialty.

He was author of many valuable papers, most of them on surgical subjects, and among these we might mention: First, "Pseudo Peritoneal Caul," one of his early papers read before the Southern Surgical Society in 1912; Second, "Appendicitis—The Crescendo of Treatment," read

before the N. C. Medical Society, 1926, at Wrightsville, N. C.; Third, "Shirring the Round Ligaments," a method devised by Dr. Long. This was first read before the Southern Surgical 1915. Fourth, "Enterotomy —A Perfected Technique," read before the Southern Surgical Society in 1916, and this paper was also used as a thesis before the University of Manitoba, when they conferred the degree of M.C., upon him. Fifth, "The Early History of the N. C. State Medical Society," read before this body at is annual meeting in 1918, Asheville, N. C. This paper many of you will recall; it was as complete as it seemed possible to make it, and involved a great deal of labor and expense and he was able thus to preserve for us much of what would ultimately have been lost. He was able to collect all the transactions of this Society from its beginning in 1849 to the year of his paper, with the exception of three years during the Civil War, and he had all these bound into a volume and included a photograph of practically all its past Presidents, and this volume is now in his library at his home in Greensboro, N. C. Another noted contribution to our literature was a paper on "Enterocolotomy Combined with Enterotomy in Acute Appendicitis," read before the Southern Surgical Society and published in Surgery, Gynecology and Obstetrics in July, 1926.

His Presidential address before the Southern Surgical in 1914, "Wisdom of the Past—Prophecy of the Future," was considered a masterpiece, but nothing that he ever wrote or said, I believe, was quite the equal of the paper he read before this body at its Pinehurst meeting 1922 on "Crawford W. Long, The Discoverer of Ether Anaesthesia." Dr. Long went to extreme pains, and at the expense of a great deal of time and labor, gathered data and compiled it and was able to so conclusively establish the claim of Dr. Crawford W. Long that the Anaesthetic Association acknowledged the claim, and unveiled a monument in Dr. Crawford W. Long's honor in Washington, D. C., last year, and invited Dr. John W. Long to be present and make an address on this occasion. I might add by way of parenthesis that Dr. Crawford W. Long was in no way related to Dr. John W. Long who did this splendid service to his memory. Dr. Long made many other contributions to surgical literature, but the scope of this paper will not allow their discussion here.

Dr. Long was an active member and took great interest in many medical societies; he was a member and Ex-President of the Guilford County Society, was a member and Ex-President of the N. C. State Society, a member of the Tri-State Medical Society, and of the Southern Medical Association. Was one of the founders of the Southern Surgical and Gynecological Association and was President of this Association in 1914. He was a member of the American Medical Association and one of the founders of the American College of Surgeons, and it was through his efforts that the *Candidates School* for *Fellowship* was organized, as an auxiliary to the A. C. S.

Of his war record there is much that I might say to his credit, but I shall only have time to enumerate a few of his achievements.

He was one among the first to volunteer his services about February 1917 (if I remember correctly) and he was soon commissioned a Lieutenant and got busy organizing the physicians of the State for service in the great war, and about five hundred physicians, dentists and veterinarians of the State were brought into the service largely through his influence and efforts. After less than a year's service he was promoted to Major and was instrumental in organizing a Red Cross ambulance unit of more than one hundred officers and men, all of whom were new to the service. Later, acting under a special order from Surgeon-General Gorgas, he organized Base Hospital No. 65, consisting of three hundred and thirty-four officers, men and nurses. These too were all new to the service but did valiant work, as their records show. They were trained at Fort McPherson, later sent to France, and were stationed at Kerhuon, near Brest, where they performed a most important and distinguished service, and their records show that nearly forty thousand of our soldiers came under their service during their stay at Kerhuon. Dr. Long was ordered to France with the commission of a Lieutenant Colonel and was placed in command of Base Hospital No. 65 which had preceded him, and later was made Surgeon in Chief of the Kerhuon Centre.

While with the A. E. F. he was sent on detached service to a number of other hospitals, and was on that historic day, November 11th, 1918, on duty with Base Hospital No. 1 in the Toul Sector.

On being returned to the States he was sent to Camp Gordon to take charge of the reconstruction surgery at this camp, and by virtue of his rank was made the commanding officer. Not satisfied with his service to his country by the ending of the war he again joined the Medical Reserve Corps with the rank of Lieutenant Colonel, and always attended the annual encampments.

Since the war he organized Evacuation Hospital No. 38, and at the time of his death was consulting surgeon to the Army, with the rank of Colonel.

Dr. Long served as Medical Aide to the Governor. This was an appointment from the Provost Marshal General's office and the duties involved the organization and supervision of the Medical advisory Boards throughout the State.

As we recall all these achievements, I think we may well say of him: "It matters not how long we live, but how well."

Dr. Long was not only a *great Surgeon* (and he was classed with the best) but he was a *great teacher* as well, and I believe did more to elevate the standard of surgery in this State than any other man who has ever lived among us. He loved the younger men of the profession and seemed always anxious and willing to help them, and I dare say that many among you today have reason to thank him for help and favors.

As a *student* he was profound and was never satisfied until he had a thorough knowledge of the subject of his interest. As a *thinker* he was clear and quick and always seemed a little ahead of the procession, seeing the results of any undertaking before they were apparent to most of us.

As an *originator* he had few equals. Several original operations stand to his credit and are being used by the most eminent surgeons of today.

As a *Worker* few were his equal. He never seemed to waste a moment and kept it up day in and day out, no doubt shortening his days by so doing, but who would not for a life so filled with achievements, for

"We live in deeds not years
In thoughts not breaths,
In feelings not in figures on a dial
We should not count time by heart throbs.
He most lives, *who thinks most, feels noblest, Acts Best.*"
—*Baily.*

As a surgeon he was known to all of you, and we must accord him first place among those who wield the knife, for many years the *Dean of Surgery in North Carolina.*

Coming to Greensboro about the same time as the author of this paper and having a rather close association with him for many years, I feel that I knew him well. If there was one point in his character stronger than others, I would say that it was his painstaking persistency and the bull dog tenacity with which he went at things.

It was he who first originated the N. C. Surgical Club. Those of us who were associated with him in this Club will recall how well these trips were planned. We knew in advance just what train we would take for the trip, at what hotel we would stop, knew the day and hour of each clinic, who would be the clinician and what would be done. There was no lost motion anywhere, and I am sure these were the most pleasant and the most profitable trips of my life. And let me add, that I have been told that it was from these trips of the North Carolina Surgical Club that the idea originated for holding of state clinics by the A. C. S.

Dr. Long always took great interest in these state clinical meetings of the A. C. S. and spent several weeks during 1924 in touring the country and taking part in conducting these meetings, giving lectures at each state meeting and taking an active part in their programs.

A man of strong will and a determined fighter, many disagreed with him on occasion, but none failed to honor and respect him.

Nature had endowed Dr. Long with a full complement of those attributes that go to make a great surgeon. He had good health, and best of all, good habits. He had industry to an amazing degree, never seemed too tired to do his best, always on the alert for every detail necessary for the best interest of his patient, never despairing so long as there was life in the body of his patient, and always seemed to have something in reserve if the last remedy had failed. As his skill increased and his fame spread, his labors became more arduous and, always placing himself last he seemed not to realize that his physical ability was being worked beyond its power of endurance, and before he realized it had depleted his recuperative powers beyond their power to react. He died as he would wish, in the harness up to the very last.

In honor of our distinguished brother, *Be it resolved* by the N. C. Medical Society at its meeting in Durham, N. C., 1927, as follows:

First, That in the death of Dr. John Wesley Long the Medical profession of North Carolina has lost one of its most eminent members, and this Society one of its most distinguished surgeons, one whose great learning and distinguished service constituted a very real contribution to the achievements of our profession. The rectitude of his conduct as a physician and surgeon, his constant devotion to the upbuilding and improvement of our profession and his steadfast adherence to its highest ideals and noblest traditions, and his loyal and unselfish service to his country, was a great inspiration, the memory of which should ever be revered.

Second, That a copy of these resolutions be spread upon our minutes.

Third, That a copy be sent to the members of his family with an expression of our sympathy and condolence.

Remarks Submitted by Col. Joseph Howell Way:

I can not permit the present occasion to pass into history without paying my personal tribute to the memory of our departed friend, Col. John Wesley Long, Med-ORC, U. S. Army. Honest man, loyal citizen, patriotic volunteer soldier, skilled physician and great surgeon, he was!

My acquaintance with him began about the time of my entry into membership in the state medical society at Charlotte in 1887. A fellow alumnus of Vanderbilt University, he greeted me pleasantly when I came into the society and a friendliness of life-long duration was established and, though many time we were at opposites in our opinions of men and things, we each cherished much respect for the other. Dr. Long was then residing in Randleman, Randolph County, and was like myself a country doctor. He was from the beginning of his career a student of medicine in the best sense of the term, applying himself with untiring zeal and energy to any problem or branch of medicine attracting his attention as a thoughtful survey of the variety of his contributions to the literature of this society well attests. His professional activities in Randleman, Salisbury, Richmond, Va., and finally his crowning professional success in Greensboro substantiate the fact that he was no ordinary man of medicine. Though covering, as he did for many years, the broad field of general medicine, and doing it exceeding well, I think it may be truthfully said, that from his earlier professional years he evinced a decided *penchãnt* for surgery in which he became a recognized leader not only of his native state, but in the Southland and the Nation as well.

Becoming enrolled in the Medical Section, Officer's Reserve Corps, U. S. Army a few years before the recent great international armed conflict, when the United States in April, 1917, declared formally the recognition of an existing state of war with Germany, Major Long immediately directed his energies and undivided attention to help align the medical profession of North Carolina in the patriotic duty of tendering their services to the federal authority in preparations for what all felt was the stupendous effort of our nation. Those of us who were present at the annual meeting of this society in 1917 at Asheville, just ten years ago, or those who recur to the inspiring accounts in our annual volume of transactions of that momentuous meeting, will recall his manifested interest in securing volunteer doctors for the army. Again

when some years later, and during his presidency of the state medical society, I approached him at a meeting of the Tri-State Medical Association in February a few weeks prior to our annual state meeting, and discussing with him the desirability of organizing a special section in the state society specially composed of medical officers who had served during the World War for the purpose of strengthening the ties between those so serving, preserving in part the military history of the profession of North Carolina in that great conflict, and further to prepare a rendezvous for doctors who felt the profession should never be called upon again to engage in military endeavors with so little preparation as most of us had experienced prior to 1917, Dr. Long quickly grasped the full force of my arguments and before I had concluded my remarks, immediately spoke up, agreeing in toto with the proposition, and saying, "Way, I appoint you chairman of that section right now, and order you to prepare a program for the state medical society meeting this year."

I demurred a bit on account of lack of time, but he insisted, and at the session of the N. C. State Medical Society a few weeks later he advised and secured the permanency of the veteran's section as a part of the regular annual program. In this way he stamped on our records the fact that the organized medical profession of this state appreciated the efforts of its members who had served in the armed forces of the nation during the World War, but of possibly greater importance, emphasized the fact that never again should the members of our profession fail in their citizen's duty to aid in fostering, not the harsh spirit of cold militarism, but a recognition of the need at all future times of cultivating the spirit of an intelligent preparedness to be able to quickly and efficiently render the profession's finest service whenever a military emergency arises.

But I must desist, happy though the theme may be. Were I asked to sum up in a single word the secret of John Wesley Long's successful career, I would without hesitation say, it was due to his ever having a high ideal and doggedly and persistently pursuing it! It is my good fortune to possess the four issues published of the *Asheville Medical Review,* a medical magazine published at Asheville in the fall of 1890 under the editorial direction of Drs. Frank T. Merriwether and H. Longstreet Taylor of that city, thirty-seven years ago when Dr. Long was a country doctor in Randolph County. Dr. Long had had some correspondence, and had met at the annual meetings of the state medical society, the Grand Old Man of Public Health in North Carolina, Dr. Thos. F. Wood, Secretary of State Board of Health and co-editor of the N. C. Medical Journal, and under Dr. Wood's inspiration Dr. Long essayed the dual task of organizing a county medical society in Randolph County and of organizing a county health department. He headed both organizations, and holding a public meeting of citizens delivered an address, printed in this *Review,* on public health which was truly epochal, far ahead of its times, and which would today make an excellent address on a similar occasion, impressing one as it does with both a fine conception of public health possibilities (much now happily being realized) and of the fine healthy ideals of the young country physician. Dr. Long's closing words were these: "Nor does anyone see people as does the doctor, giving the

first welcome, caring for us through life, and ministering through the final illness with its last solemn hours. I thank God that I sprang from the loins of a man who gave his life to the relief of suffering humanity, who in humility trod the quiet life of a country doctor of medicine, attaining neither worldly rank nor fame, and yet instilled by his life into my heart a desire to succor those in sickness and suffering that I would not exchange for wealth or royal crown. In the spirit of my father, I hope to live, with this as the one great and absorbing ambition of my life."

Gentlemen of the Society, I leave it to you who knew this man John Wesley Long, doctor of medicine and surgery, who lived and labored in our midst for near thirty-seven long years after he uttered these sentiments, did he not live to the end in close communion with his young life ideals?

DR. TOM C. McBRAYER

Dr. Tom C. McBrayer, of Rutherford County, died September 6, 1926, at his home in Forest City, in his 70th year.

He had practiced medicine in his locality around 40 years. He is accredited with being the largest land owner in Rutherford County.

DR. J. J. L. McCULLERS

Dr. J. J. L. McCullers, of Wake County, died at Rex Hospital, December 26, 1926, at the age of 76 years.

He was for many years the County Physician and Health Officer of Wake County, and spent his many years in the pursuit of his profession.

His funeral services were held at his home, McCullers.

DR. JOHN A. MACKETHAN

Dr. John A. MacKethan, of Cumberland County, died at his home in Fayetteville, September 10, 1926, at the age of 51 years. He had practiced medicine in his native city for 25 years.

Dr. MacKethan's death was a great shock to Fayetteville, where he had long been identified with all the interests of the city, and had won wide recognition as a physician.

Dr. MacKethan was for a number of years a member of the staff of Highsmith Hospital, Fayetteville.

DR. CHARLES STEWART GILMER

By Dr. W. J. McAnally, High Point.

Astronomers say that Beltese, the largest star yet discovered, is so far from our earth that it takes two hundred thousand years for its light, traveling one hundred and eighty-three thousand miles per second, to reach this world of ours. If Beltese should cease to exist, yet its light and influence would continue to be poured upon this beautiful little planet where we now live for two hundred thousand years.

Since light, heat and magnetic influence are practically eternal, once they have generated, what may we expect in case of a splendid life? Those finer and more vital influences must be eternal as the great stars and solar systems which the Creator has suspended in space. The marvel

and majesty of this material creation is appealing and appalling in its grandeur.

The influences of a well-spent life are also appalling when one attempts to calculate them. They may not change the course of planets but all human beings of any force at all definitely influence every person they come in contact with. To properly assess large values it is imperative to have standards for comparisons.

On July 11, 1864, while the fortunes of the Confederate States of America continued to wane and the horrors of civil war hung over our beautiful Southland like a sable mantle, a fine baby boy came into the home of Joseph Gilmer and Nancy McLean Gilmer, near Alamance Church in the southern part of Guilford County. His parents named the baby Charles Stuart, the Stuart being a compliment to that daring, brave, fearless, irresistible cavalry general of Lee's superb staff.

Chas. Stewart Gilmer grew up in the home where he was born, during the lean years which his sunny south had following the great Civil War. He attended the local public schools and later entered Davidson College, where he graduated in 1886. He taught school in Bladen County, North Carolina, two or three years then studied medicine at the University of New York, graduating in 1891. He began the practice of medicine at McLeansville, Guilford County, North Carolina, but after a year or so he went back to the home where he was born and there continued to practice his profession for over thirty-five years. He was a splendid citizen, a wise physician, faithful churchman and helpful, dependable friend.

In 1898 he married Miss Annie Tate of McLeansville, N. C. She survives her husband. While no children came to bless his home and perpetuate his name, yet he loved children and had always an abiding faith in young people. For eight years he was an efficient member of Guilford County Board of Education. With a beautiful optimism he visioned the glorious possibilities and far reaching potentialities of the school children of his county and during the time he served on the County Board of Education Guilford's public school system made its greatest progress. Train the children was his idea because they can elevate and enrich and ennoble your civilization or they may weaken or destroy it.

His neighbors say of him that he was ever a wise, helpful, interested, friend of all men. Since early life he was a member of historic Alamance Presbyterian Church and for many years an Elder there. He was no intolerant church bigot and did not accept ignorant prejudice, folk-lore and the mores of any people as the veritable voice of God. In a head like a Jove, he possessed a well-balanced brain, with which he weighed facts and analyzed men and their motives and arrived at conclusions.

For over thirty years he was a member of the North Carolina Medical Society and the Guilford County Medical Society. On January 5, 1927, he died of profuse hemorrhage of the large bowel and was buried in the cemetery at old Alamance Church where sleep his ancestors.

DR. W. C. OATES

Dr. W. C. Oates, of Rutherford County, a well known physician, died February 17, 1927.

Dr. Oates was a native of Grover, S. C., but had been a practicing physician in North Carolina for a number of years.

DR. J. B. OUTLAW

Dr. J. B. Outlaw, of Zebulon, died April 13, 1927, in a Rocky Mount hospital, where he had been taken for treatment. Dr. Outlaw was forty-seven years of age and had practiced medicine for twenty-five years. He first located in Goldsboro but for the last ten years had practiced at Zebulon, being regarded as one of the most skillful and successful physicians in his section. He is survived by his wife and two children.

DR. F. S. PACKARD

Dr. F. S. Packard, a native of Maine, but at the time of his death a well known physician of Norlina, N. C., died August 10, 1926, at Johns Hopkins Hospital, Baltimore.

Dr. Packard was about 65 years of age. He had practiced medicine about 12 years in Norlina, and before moving there had practiced for several years in Warrenton. He was president of the Warren County Medical Society and director in the Norlina Drug Company.

DR. F. A. SHEPARD

Dr. F. A. Shepard died December 9, 1926, at his home in Liberty, aged 43 years, following an illness of only a few days of pneumonia.

DR. W. S. STEELE

Dr. Steele was born in Rockingham, August 11, 1849, and died August 21, 1926, in the Charlotte Sanatorium.

Dr. Steele was the first surgeon in his section of the State to perform an operation for appendicitis.

He graduated from the Bellevue Medical College, of New York.

Ill health in 1903 forced him to give up his practice, and the last years of his life had been devoted to farming interests in Richmond County,—never losing, however, his interest in his profession and his association with his medical brethren.

DR. CHARLES STERLING WHITE

Dr. Charles Sterling White, of Winston-Salem, died at a hospital in that city, April 18, 1927, from injuries sustained in a collision of his automobile and a street car the preceding day. Dr. White was a promising young physician, being only twenty-six years of age, and his untimely death has cast a gloom over the entire community. Interment was at Stovall.

DR. JOSEPH P. WHITEHEAD

Dr. Joseph P. Whitehead, of Rocky Mount, Nash County, died suddenly April 11, 1927, in a New York hospital where he had gone for treatment.

Dr. Whitehead was graduated in medicine from the University of Maryland in 1899. He was licensed by the State Board of Examiners for North Carolina the same year, and, at once began the practice of his

profession in Rocky Mount, being associated with his distinguished father, the late Dr. W. H. Whitehead. In a short time the father was removed by death and young Whitehead was left to assume all responsibilities alone which time and opportunity soon proved he was abundantly capable of doing. His was a broad and wholesome mentality, capable of seeing the many sides of things affecting humanity, and with rugged honesty of purpose he stood loyally for the right in all things.

DR. JOSEPH PHILLIPS WHITEHEAD

By E. G. Moore

Joseph Phillips Whitehead was born at Battleboro, N. C., on November 9, 1872, and died in New York City, April 11, 1927, where he had gone seeking relief from a serious physical disorder. His mother was Bettie C. Powell, of Edgecombe County and his father Dr. William H. Whitehead, a noted physician and surgeon and a prominent member of the Medical Society of North Carolina.

His early training and association with his father inclined him to the study of medicine, and after receiving his academic education at Davis Military Academy and the University of North Carolina, he entered the Medical College of the University of Maryland at Baltimore, where he received the degree of Doctor of Medicine in 1899. Securing his license from the State Board of Examiners, he became associated with his father in general practice at Rocky Mount, N. C., and for 27 years continued a citizen and physician of that town, attaining and maintaining a reputation of ability and popularity equal to any of his medical associates and confreres.

On December 20, 1900, he was married to Miss Alta B. Cozart, a refined and cultured young lady of Winston-Salem, who in a large measure inspired his activities and shaped the destiny of his superior professional career. To this union there were born three children, William C., Elizabeth, and Josephine Whitehead.

His elegant home, planned with the design for comfort, and its artistic furnishings, a model of taste and refinement, bespeak in a large measure the congenial atmosphere of a contented and happy family circle.

He was one of the founders of the Park View Hospital, and devoted all his time and his energies in the pursuit of his chosen profession and in this field of service rendered a worthy contribution and won the confidence and esteem of a large and loyal clientele. He was conscientious and faithful in his ministry to his patients and successful to an eminent degree in the relief of suffering and the cure of disease. He was a good doctor, a good friend, and a good citizen, serving well his day with distinction and with honor. He died young and yet lived long enough to firmly identify and establish himself as a leader in every department of professional and civic relationship, which had for its object the relief of human suffering and the uplift and betterment of his community.

It was indeed a tragic hour, when in the pursuit of his professional interests, he fell on ice and sustained a broken hip from which he never recovered, and on account of which his activities became severely lessened.

After spending weary weeks and months of confinement in bed, he improved and with the aid of crutches he again entered his chosen field of work; but physically he could not endure, and after an all night service at an obstetrical bedside, he felt the cringing pains of his old hurt and realized he could no longer hope to resume his labors and his activities. Seeking again his individual physical improvement, at the hands of specialists, he was overtaken by the evil shadow and in the twilight hour he heard his Master's call—Cease thy work and come up higher. He was unafraid and with conscious mind dispatched a message of love to his family at home and with a peace that knows no fear, he closed his eyes in eternal slumber.

A faithful spirit has gone to his reward; sweet memories linger with his devoted friends, and in the happy home beyond, may he find everlasting rest for his body and peace everlasting for his soul.

DR. S. W. THOMPSON, SR.

Wake Forest

Dr. Thompson was all his life a general practitioner in the best and most general acceptation of that term. Most of his professional life was spent in Wake County, in and near Wake Forest. He was a consistent member of the Wake County and State Medical Societies. He has two sons who are physicians, Dr. S. W. Thompson, Jr., practicing medicine now at Morehead City. Dr. Thompson, Sr., had been in declining health for two or three years and the end came at his home in Wake Forest, April 15, 1926.

REPORT OF STATE BOARD OF MEDICAL EXAMINERS

The following report of the State Board of Medical Examiners was received and adopted:

ANNUAL REPORT OF THE SECRETARY OF STATE BOARD OF MEDICAL EXAMINERS

Your new Secretary found the books and records in excellent shape, due to the careful and painstaking work of the retiring Secretary, Dr. K. P. B. Bonner. Dr. Bonner deserves a great deal of credit for having placed North Carolina in the forefront in the matter of medical licensure. While in attendance at the Congress of Medical Education and Licensure at Chicago in February of this year, your Secretary found that North Carolina was recognized as having one of the most complete systems of registration. This is due to Dr. Bonner's untiring energy in the matter.

The work of the Secretary consists of a voluminous amount of correspondence on various subjects pertaining to practice of all kinds, inquiries in regard to location for physicians in the State, and in regards to reported violations to the Medical Practice Act. The Attorney General of the State of North Carolina has placed the legal services of his Department at the disposal of the Board in the prosecution of violators of the Medical Practice Act. Several pernicious bills were introduced during the last General Assembly, but due to the vigilance of the Committee on Legislation, none of these bills was passed. At a regular meet-

ing of the Board on December 1st, 1926, at Raleigh, fourteen physicians were licensed by endorsement of their credentials. The list is appended. At a special meeting on February 19, 1927, two physicians appeared before the Board and were licensed by endorsement of their credentials, making sixteen in all who have been licensed by your present Board.

The next meeting of the Board will take place in Raleigh, June 20, 1927, at which time both applicants for license by endorsement of credentials and by examinations, will be received.

JOHN W. MACCONNELL, M.D., Secretary-Treasurer.

DATE OF ISSUE DEC. 1, 1926

3832	Black, Hugh Ratchford	Spartanburg, S. C.	U. of Md	Endorsed S. C.
3833	Brown, James Steven, Jr.	Hendersonville, N. C.	Tulane	Nat'l Box
3834	Carr, Eugene Morrison	Asheville, N. C.	Johns Hopkins	Md.
3835	Fuller, Rawley Howard	Clover, Va.	Med. Col. Va.	Va.
3836	Harvey, Francis Rudd	Kitchener, Ont.	U. of Toronto	Canada
3837	Hopkins, Percy Isaiah	Dothan, Ala.	Vanderbilt Univ.	Ala.
3838	McChesney, William Wallace	Abingdon, Va.	Med. Col. Va.	Va.
3839	McFadden, Ralph Hope	Chester, S. C.	Med. Col. S. C.	S. C.
3840	Ogilvie, Hansen Slaven	Charleston, W. Va.	Med. Col. Va.	Va.
3841	Rhudy, Booker Ephraim	Abingdon, Va.	Med. Col. Va.	Va.
3842	Stahlman, Frederick C.	Charleroi, Penn.	West. Penn. Med. (U. of Pittsburgh)	Penn.
3843	Thomason, James Archibald	Fountain Inn, S. C.	Univ. of Md.	S. C.
3844	Weltmer, Silas Woodson	Asheville, N. C.	St. Louis Univ. Medical School	Mo.
3845	Wood, Landrum Walker	Fountain Inn, S. C.	Atlanta Med. Col. (School of Med. Emory Univ.)	S. C.

DATE OF ISSUE FEB. 19, 1927

3846	Anderson, William Banks	Durham, N. C.	Johns Hopkins	Nat. Board
3847	Burgess, Taylor Stukes	Atlanta, Ga.	Johns Hopkins	Nat. Board

RESOLUTION OF THANKS

Dr. J. Howell Way moved that the thanks of the Society be extended to the citizens of Durham and to the members of the local society and their wives for their many and successful efforts to contribute to the pleasure of the members of the State Society and their guests during the meeting. Motion seconded and carried.

President Myers expressed his personal appreciation to the various members of the county society and to the citizens of Durham who helped to make the meeting successful.

INSTALLATION OF PRESIDENT

PRESIDENT MYERS:

Now comes the most pleasant task I have had to perform during this meeting. For more than half of my lifetime I have known a handsome gentleman who was born and reared on the banks of the Yadkin River under the shadow of the Blue Ridge Mountains, one of the first friends that I made when I began the study of medicine as a student under a preceptor, as someone mentioned when speaking of Dr. Long tonight. While working and studying with Dr. Rainey, of Elkin, as my preceptor, Dr. Burrus, then in his early practice in a village near that town, invited me to ride with him out into the country, where he demonstrated to me his skill as an obstetrician and where I had my first opportunity to observe the operation.

I shall ask Dr. A. J. Crowell and Dr. D. A. Stanton to escort Dr. Burrus to the chair.

Dr. A. J. Crowell:

May I say it gives me great pleasure to escort this young man to this chair?

Dr. D. A. Stanton:

I concur in that feeling.

President Myers:

Dr. Burrus, I welcome you to this office.

Dr. J. T. Burrus:

If you knew just how unworthy I feel now of this the greatest honor which can be conferred upon a medical man in North Carolina, you would fully appreciate just how impossible it is for me to express to you in words my gratitude for this honor shown and this confidence which you place in me. To be escorted to this honorable and high position by such distinguished gentlemen as those who escorted me here makes me feel doubly unworthy of occupying this position. To the Nominating Committee I feel profoundly grateful; to this Society I feel profoundly grateful. Of those who are older and wiser I ask guidance; of those who are my equals in years and experience I ask encouragement; of the young men just beginning a career in this greatest of all medical associations I ask their heartiest cooperation. I hope to receive the cooperation of all the members of this Society for it is not my organization; it is no man's organization but the organization of the greatest profession in the world; it is the greatest society we have. I beg for your assistance, and I implore you to be patient with me, overlooking my imperfections and enduring with kindness the acts that I may endeavor to bring forth with your assistance for the benefit of this organization. I thank you very much.

There being no further business, the general session adjourned *sine die*.

CONJOINT SESSION

AND THE

MEDICAL SOCIETY

OF THE

STATE OF NORTH CAROLINA

OF THE

NORTH CAROLINA STATE BOARD OF HEALTH

WEDNESDAY, APRIL 20, 12:00 NOON

ROOM C, WASHINGTON DUKE HOTEL

Dr. J. Howell Way, President State Board of Health, Presiding.

MEMBERS OF THE NORTH CAROLINA STATE BOARD OF HEALTH

J. Howell Way, M.D., President.....Waynesville
Thomas E. Anderson, M.D.,.....Statesville
A. J. Crowell, M.D.....Charlotte
L. E. McDaniel ..... Jackson
Cyrus Thompson, M.D. ..... Jacksonville
E. J. Tucker, D.D.S.....Roxboro
D. A. Stanton, M.D..... High Point
James P. Stowe, Ph.G.....Charlotte
John B. Wright, M.D.....Raleigh

EXECUTIVE STAFF

Chas. O'H. Laughinghouse, M.D., Secretary and State Health Officer.
Ronald B. Wilson, Assistant to the Secretary.
C. A. Shore, M.D., Director State Laboratory of Hygiene.
G. M. Cooper, M.D., Director Bureau of Health Education.
H. E. Miller, C.E., Chief of Bureau of Engineering and Inspection.
F. M. Register, M.D., Deputy State Registrar of Vital Statistics.
H. A. Taylor, M.D., Director Bureau Maternity and Infancy.
C. N. Sisk, M.D., Director Bureau of County Health Work.

Conjoint Session of the Medical Society of the State of North Carolina and State Board of Health was called to order by Dr. J. Howell Way, President of the State Board of Health.

The annual report of Dr. Charles O'H. Laughinghouse, State Health Officer, was submitted, as follows:

ANNUAL REPORT OF THE SECRETARY OF THE NORTH CAROLINA STATE BOARD OF HEALTH

Durham, N. C., April, 1927.

Mr. President and members of the conjoint session of the Medical Society of the State of North Carolina and the North Carolina State Board of Health:

I am herewith submitting the annual report from the North Carolina State Board of Health to the Medical Society of the State of North Carolina as required by law.

One hundred and sixty-three years ago the entire public health activities of North Carolina functioned under a law which located officials at Fort Johnson, before whom masters of ships were required to testify regarding the existence of distempers on board their crafts. Ships infested with disease were ordered to cast anchor off Battery Island where the sick were cared for, and after forty days the commander of the ship was allowed to enter his boat, wash its hold with vinegar and smoke it with brimstone. Ninety-five years later an act was passed incorporating the Medical Society of the State of North Carolina. Eighteen years later, just fifty years ago, at the instigation of the medical profession of the State, the General Assembly gave the Medical Society the power to act as the State Board of Health.

Guided by the watchful wisdom and integrity of loyal predecessors through a period of half a century, this organization of yours has grown from a small institution, sustained by an annual appropriation of $200.00 to a Department, Professional and State, investing this year nearly a half million of dollars in the fight which assists medicine and medical men in the lengthening of life and the prevention of disease.

The history of North Carolina's Board of Health reads into the records of the profession of the State, a veritable romance, resplendent with achievement.

Its story is the story of heredity in that it records the quality, foresight, wisdom and power of direction of the State's profession.

Out of the profession's loins the Board was begotten. Out of the State's womb it was born and by the profession's paternalism and support coupled with the maternity of the State it has developed and has been sustained.

The Board's history, the Board's achievement, the Board's policies, are nothing more nor less than the diary of a dependent but obedient child growing to a status of great strength because in its conduct it has never departed from parental obligation and parental authority.

The respective bureaus of the Board, bureaus which have been added from time to time as conditions have demanded, are functioning satisfactorily. Contagious and infectious disease control compares favorably with the rest of the country, medical inspection of schools is progressing as formerly, maternity and infancy hygiene is becoming more popular every day, malaria control presents a good report and other special units of endeavor are being actively and successfully carried on.

The Legislature, which convened in January last and adjourned in March, finally endorsed the recommendations of the Advisory Budget

Commission with relation to the financial allowance as originally submitted by the Board of Health.

It passed an amendment to the Sanitary Privy law making the architecture and structure of sanitary privies more nearly optional with the owner than mandatory with the Board of Health. This amendment did not disturb the applicability of the law, however, so far as its purposes and power for preventing disease through the construction of sanitary privies is concerned.

It changed the salary limit of the Executive Officer of the Board from five to eight thousand dollars.

It passed a Sanitary District bill, which is essentially an act enabling districts in the State, upon petition of fifty-one per cent of the freeholders of that district to formulate sanitary areas for the purpose of carrying out sanitary undertakings. Industrial corporations or companies, and incorporated municipalities are included in these sanitary districts only upon approval of the governing body of the industrial corporations or municipalities.

Statements made on the floor of the Senate and statements published in the press relating to graft, and proven graft, within the Board were such as to require a request for an investigation of charges preferred. The Executive Officer of the Board requested the Governor to direct the Attorney General to make a prompt and thorough investigation looking to the proof or denial of these charges. The result of the investigation as reported by the Attorney General is as follows:

On April 15, in a letter to Governor McLean, Attorney General Brummitt makes this statement, "I informed Doctor John B. Wright and Senator Rivers D. Johnson of your request that I enter upon this inquiry. Neither has submitted to me any charges of graft against the State Board of Health or any of its officers, members or employees, nor any evidence upon which an investigation could proceed."

The Attorney General further states that "Senator Woltz disclaimed any idea of charging graft, but that he did express the view that the inspectors of the Bureau had required a too exact conformance to the plans and specifications of such buildings." In other words, Senator Woltz's complaint would indicate that he disapproved of any system that would bring about efficiency in the execution of the law.

The Attorney General states in his letter to the Governor that "no charges of graft have been filed; that no information involving the State Board of Health or any of its officers, members or employees in graft has been presented, and that he is without material upon which to proceed with the investigation."

In order that this conjoint session and the profession of the State may have an idea of the next long step looking to the extension of life and the prevention of disease, it should be called to your attention that cancer, heart, kidney and circulatory diseases are increasing alarmingly. The prevention of these degenerative diseases has resolved itself into an individual problem. Frequent and careful physical examinations followed by such advice and treatment as is applicable to the individual case is the only way to reduce the death rate caused by the above mentioned diseases. Being an individual problem, it must be dealt with

conjointly by and through an alliance between the medical practitioners of North Carolina and the North Carolina State Board of Health.

Your Board of Health purposes to stimulate a genuine interest in annual and semi-annual physical examinations, provided the undertaking meets the approval of the profession in the State. With this in view, it is asking your endorsement and it is asking that you direct your incoming president to appoint a committee to confer with the Board of Health looking to the completion of an agreeable, workable plan which will inform the public and influence the people to an appreciation of the importance of such practice.

The Board of Health is converted to the opinion that physical examinations of the people of the State should be made by the physicians of the State and if the Medical Society approves it purposes to give all publicity to the importance of physical examination and to do everything else in its power to assist the profession to meet the demands which annual and semi-annual examinations will make upon it both collectively and individually.

Hitherto, there has not been established a clean-cut, always visible line agreed upon by the Board of Health on the one side and the physicians in active practice on the other, the line giving definition to the confines of the specialty of preventive medicine, if specialty it is.

Do we need definite expressions whereby the profession in a given community will be enabled to say to the Board of Health, "Thus far shalt thou go, and no further?"

Shall it be agreed that whatever the profession can do better than the State, that the profession should do?

Shall it be agreed that whatever the State or a group of private citizens in conjunction with the State can do better than the profession is doing, that the State should do, even though it infringes a bit on the preserves of curative medicine?

The Executive Officer of the Board of Health is requesting that your president direct your committee on public health administration to formulate a definite policy regarding this problem and submit said policy to your House of Delegates for adoption.

Your present Executive was inducted into office October 1, 1926. For sixteen years prior to the assumption of his present duties he has been in close touch with your Board of Health's activities, having been a member of the Board since 1911. Since 1893 he has given his entire time to the practice of general medicine. His acquaintance with the activities of the Board, the Medical Society, and the Profession, coupled with a personal experience in nearly every phase of the medical man's life, will, it is to be hoped, compensate in part for a lack of academic training in the specialty of public health which, after all, is necessary more particularly to the execution of details.

An intimate acquaintanceship with the problems, satisfactions, dissatisfactions, pleasures, pains, purposes and emoluments of medical men, through the actual doing of their days' work, has begotten in the heart of your Executive Officer a deep regard, a sense of companionship in arms, a consideration, a respect for, and above all, a loyalty to the medical profession which will force him to keep an undivided faith with

medical men in active practice in North Carolina. May he ask your assistance? May he depend upon your indulgence? May he feel the protection and the confidence which should abide with him through your patient cooperation? May he remind you now that the problems of infection and contagion are fairly well in hand; that the other diseases of infancy, childhood, youth, middle age and senility can be handled in no way save through the alliance of the Board of Health and the entire profession of the State. Medical advancement has brought us to where there can be no parting of the ways. Preventive medicine and curative medicine, public health workers and private practitioners must all hang together or they will hang separately.

"For this is the Law of the Jungle—as old and as true as the sky;
And the Wolf that shall keep it may prosper, but the Wolf that shall break it must die.
As the creeper that girdles the tree-trunk, the Law runneth forward and back—
For the strength of the Pack is the Wolf, and the strength of the Wolf is the Pack."

Dr. Thomas E. Anderson moved the adoption of the report. Motion seconded. After discussion and amendment, the report was adopted.

On motion of Dr. J. T. Burrus, High Point, a vote of thanks was given to Dr. Carl P. Parker, Seaboard, and Dr. M. H. McBryde, Reidsville, for their attitude on the bills which were presented to the General Assembly. Motion seconded and carried.

There being no further business the Conjoint Session then adjourned.

SUPPLEMENTAL REPORT FROM THE STATE BOARD OF HEALTH

Dr. W. S. Rankin, Charlotte, N. C., who was elected by the members of the Board in 1926 to fill the unexpired term caused by the resignation of Dr. Charles O'H. Laughinghouse to accept the election as Secretary and State Health Officer, to complete the unexpired term to which Dr. Rankin had been elected in April, 1921, tendered the following resignation to the Board of Health:

"Charlotte, N. C., April 7, 1927.

"Dr. J. Howell Way, President
"North Carolina State Board of Health
"Waynesville, North Carolina
"My dear Mr. Way:

"I herewith tender my resignation as a member of the North Carolina State Board of Health and also as a member of the Executive Committee of the State Board of Health, and request that my resignation be accepted and made effective at the first meeting of the Board following the receipt of this letter.

"The reason of this action is a pledge I gave in conference held in the City of Raleigh, March 2nd, 1927. The conference had been called by Dr. John Q. Myers, President of the North Carolina State Medical Society, for the purpose of considering what action should be taken with reference to a bill introduced by Dr. Carl P. Parker, a member of the Lower House of the General Assembly from Northampton County, and

which bill was endorsed and advocated by Dr. John B. Wright, Chairman of the Legislative Committee of the North Carolina State Medical Society.

"The purpose and the effect of the bill was to (a) increase the membership of the North Carolina State Board of Health from nine to fourteen and (b) to give the Governor ten appointments and the State Medical Society four appointments instead of as under the present statutory provisions by which the Governor appoints five members and the State Medical Society elects four. This change in the manner of constituting the State Board of Health would have gone far in destroying the dual control of public health work by the State government and the Medical Society, (a partnership which has resulted in the fifty years' life of the Board in an almost complete absence of political interference), and, in time, would have made the Board largely a creature of political interests.

"At the conference there were present the following: Dr. Carl P. Parker, Dr. John B. Wright, Dr. John Q. Myers, President of the North Carolina State Medical Society, Dr. F. M. Davis, Chairman of the Section of Preventive Medicine of the State Medical Society, Dr. John W. MacConnell, Secretary of the North Carolina State Board of Medical Examiners, Mr. James P. Stowe, a member of the North Carolina State Board of Health and a representative of the State Pharmaceutical Association, Dr. J. Howell Way, President of the North Carolina State Board of Health, and Drs. Cyrus Thompson, D. A. Stanton, A. J. Crowell, and W. S. Rankin, members of the North Carolina State Board of Health.

Of those present at the conference, Dr. Carl P. Parker, the author of the bill under consideration, and Dr. John B. Wright, Chairman of the Legislative Committee of the State Medical Society, favored the proposed legislation and the other members present opposed it. The ground taken by the proponents of the bill was that the present distribution of the membership of the Board did not afford that general representation of all sections of the State that was desirable, that at present three members of the Board were residents of the City of Charlotte, and that only one member of the Board resided east of the Seaboard Air Line Railroad. The opponents of the bill, on the other hand, called attention to the fact that the existing distribution of Board members was a temporary condition, having resulted from the death of a member living in Raleigh and the election of an eastern member as Chief Executive Officer of the Board, necessitating his removal to Raleigh, and the removal from Raleigh to Charlotte, for business reasons, of another member of the Board, all of which changes had occurred within the last fifteen months, prior to which time four of the nine members of the Board were from Raleigh and east of the Seaboard.

Dr. Parker, the author of the bill, in his discussion of the reason for his course of action, evidenced such a sincerity of purpose and indicated such a generous willingness to adjust the matter to the wishes of the majority of the conference, in so far as an adjustment might be brought about, that I, in order to show my sympathy and appreciation for his position and manly course of action, pledged myself to resign at the first meeting of the Board and to urge the election of an eastern man as my

successor, restoring a more even geographic distribution of the membership of the Board, giving Raleigh and the section east of Raleigh three members, and thereby removing, to a large extent, the only argument openly advanced for the bill. Dr. Parker having, as a result of the conference, appeared before the Committee on Public Health of the Senate and requested that his bill, which had previously passed the House, be reported unfavorably, there is no other course for me to follow than to offer my resignation and urge its acceptance with the election of an eastern man to fill the vacancy.

"In severing my connection with the Board of Health I desire to record my deep and lasting appreciation of the opportunity which I have had, through my connection with the Board, to serve my State, to thank the members of the Board, collectively and individually, for the courteous and generous consideration which they have always accorded me, and for the delightful personal relations which my association with the Board has brought about and which my resignation will not, in the least, impair.

"Very respectfully yours,

(Signed) W. S. Rankin."

The resignation of Dr. Rankin was accepted by the Board of Health after expressions of regret from every member of the body at the State's losing his most experienced and valuable services, coupled with the sorrow at the personal loss of each member in their being deprived of his wise counsel in the important work of the Board.

On motion a committee of Drs. Cyrus Thompson, J. Howell Way, and A. J. Crowell was selected to prepare an appropriate minute relative to the retiring of Dr. Rankin from the Board.

The report of the committee was unanimously adopted and is as follows:

"Whereas Dr. W. S. Rankin, who for 16 years as Secretary of the State Board gave the State of North Carolina distinguished constructive service in the field of Public Health, later serving since October 1, 1926, as a member of this Board, has now felt impelled for geographical considerations to resign his membership thereon to the end that there may be made a fuller representation of the Board from the profession in the Eastern section of the State, we feel constrained, therefore, after accepting his resignation with regret, to write upon our records our deep sense of his personal worth, our admiration of his devotion and wisdom in matters of public health and of his unparalleled service for the welfare of the people of the State, and our abiding affection for him as a man—a faithful ardent life of highest human interests and ideals, finding happiness in the clear knowledge that 'Wisdom is the lamp of the soul, and love is the oil of its lamp.' "

Dr. L. E. McDaniel, Jackson, was nominated to fill the vacancy on the Board resulting from the retirement of Dr. Rankin, and he was unanimously elected.

MINUTES OF THE HOUSE OF DELIGATES

MONDAY, APRIL 18, 1927

The House of Delegates met in Room "A" of the Washington Duke Hotel at eight-thirty p.m., and was called to order by the President, Dr. John Q. Myers.

On motion of Dr. Cyrus Thompson, in the absence of the duly elected delegate from any county society any member of that society present was permitted to represent it in the House of Delegates.

The roll was called by the Secretary, Dr. L. B. McBrayer, and the following delegates were present:

DELEGATES PRESENT

County	*Delegate*
Alamance-Caswell	
Anson	
Ashe	
Avery	
Beaufort	
Bertie	Dr. Cola Castelloe
Bladen	
Buncombe, Dr. W. L. Dunn, Dr. L. W. Elias, Dr. C. V. Reynolds, Dr. I. M. Griffin, Dr. G. A. Morgan.	
Burke	Dr. J. W. Vernon
Cabarrus	Dr. P. R. MacFadyen
Caldwell	Dr. R. W. Petrie
Carteret	Dr. B. F. Royal
Catawba	
Chatham	
Cherokee	
Chowan-Perquimans	
Cleveland	
Columbus	
Craven	Dr. D. E. Ford
Cumberland	Dr. J. F. Highsmith
Currituck	
Davidson	Dr. C. A. Julian
Davie	
Duplin	
Durham-Orange	Dr. R. L. Felts, Dr. Foy Roberson
Edgecombe	Dr. W. W. Green
Forsyth	Dr. W. M. Johnson, Dr. C. S. Lawrence
Franklin	
Gaston	Dr. Chas. E. Lyday
Granville	Dr. N. C. Daniel
Greene	Dr. W. W. Whittington

Guilford, Dr. C. W. Banner, Dr. J. L. Spruill, Dr. B. R. Lyon, Dr. C. E. Reitzel.
Halifax ..... Dr. T. W. M. Long
Harnett .....
Haywood ..... Dr. S. L. Stringfield
Henderson .....
Hertford .....
Hoke ..... Dr. L. B. McBrayer
Iredell-Alexander .....
Jackson .....
Johnston ..... Dr. J. C. Brady
Jones .....
Lee ..... Dr. J. F. Foster
Lenoir ..... Dr. J. M. Parrott
Lincoln .....
McDowell .....
Macon-Clay .....
Madison .....
Martin ..... Dr. Wm. E. Warren
Mecklenburg, Dr. H. L. Sloan, Dr. Squires, Dr. R. T. Ferguson, Dr. W. A. McPhaul, Dr. J. P. Munroe.
Mitchell ..... Dr. C. A. Peterson
Montgomery .....
Moore ..... Dr. W. C. Mudgett
Nash ..... Dr. L. W. Kornegay
New Hanover ..... Dr. J. F. Robertson, Jr., Dr. T. M. Green
Northampton ..... Dr. C. P. Parker
Onslow ..... Dr. Cyrus Thompson
Pamlico .....
Pasquotank-Camden-Dare ..... Dr. H. D. Walker
Person .....
Pitt ..... Dr. S. M. Crisp
Polk .....
Randolph .....
Richmond ..... Dr. W. D. James
Robeson ..... Dr. A. B. Holmes
Rockingham ..... Dr. P. W. Fetzer
Rowan ..... Dr. C. W. Armstrong
Rutherford .....
Sampson ..... Dr. John D. Kerr
Scotland ..... Dr. J. G. Pate
Stanly ..... Dr. J. F. Laton
Stokes ..... Dr. J. M. Haynes
Surry ..... Dr. R. C. Mitchell
Transylvania .....
Union .....
Vance ..... Dr. H. A. Newell
Wake.....Dr. T. E. Wilkerson, Dr. John B. Wright, Dr. B. J. Lawrence
Warren ..... Dr. H. H. Foster
Washington-Tyrrell .....

Wayne .....Dr. A. G. Woodard
Wilkes .....
Wilson .....
Yadkin .....
Yancey .....

PRESIDENT'S MESSAGE

Fellow Members of the House of Delegates of the Medical Society of the State of North Carolina:

During the past year, which has been only a little over nine months long, a great many privileges have been extended to me by the medical men over the State. I have visited all the district meetings in western North Carolina; I have attended a large number of county medical society meetings, and other medical meetings in the state and nation. On account of illness, conflict of dates, the shortness of my term of office, and the legislative session which lasted some time and which I attended, I was unable to visit all the district meetings in eastern North Carolina, much to my regret. I can truly say, as did Mr. MacNider last year, that my association with the physicians of the state during my administration has given me a kind of "spiritual uplift," and has helped me to see the inner and better side of the doctors in North Carolina, which I did not see before.

Our distinguished secretary, Dr. L. B. McBrayer, has given unstintingly of his time to assist me in every way possible; he has kept me informed as to all the activities of the secretary's office, and has lent a helping hand at every turn to assist me in carrying on the administrative work during the past year.

What I shall have to say tomorrow morning will cover a few things about which I have tried to impress the physicians of the state, and will give you some ideas along the lines I have been thinking. We believe that organized medicine has a definite responsibility in the field of public health, and the continuous education of the medical profession is the greatest single contribution we could possibly make. We should extend our wisdom to, and offer ourselves as speakers for the Parent-Teachers Associations, Women's Clubs, and the other civic organizations that are interested in public health work.

The several committees which will report at this meeting should claim our consideration, and we should be careful to think well before we vote on the matters which will be brought before us. Especially do I want to call your attention to the committees on Public Policy and Legislation, the Glascock-Wake County Controversy, Public Health Administration, the Proposed Amendment to the By-Laws, Periodic Medical Examination of the Apparently Healthy, Medical Journal and Whole-Time Secretary, as well as the Committee on the Harrison Narcotic Act.

I will call your attention further to the fact that North Carolina has imposed a tax of twenty-five dollars on each physician for the privilege of practicing medicine in this state, and every few days some fellow goes around selling licenses identical with those the doctors are forced to buy which allow the same privileges as the medical profession has, and we are absolutely helpless in prosecuting them for practicing medicine with-

out license. I refer to chiropodists, chiropractors, osteopaths, and the other cults that are trying to force a way into our profession. I wrote a personal letter to every county medical society in North Carolina referring to the words of our By-Laws contained in Chapter 4, Section 6, quoting that they "shall continue these efforts until every physician in the state who can be made reputable has been brought under medical society influences."

The Committee on the Moore County Medical Society Medal and a proposed Committee on the Endowment Foundation of the North Carolina Medical Society should be given a most cordial hearing and consideration.

I wish to suggest as a point well worthy of thought that the local entertainment committee hereafter pay to the State Medical Society treasury one-half the amount received from commercial exhibitors, this money to assist the State Medical Society in the financial strain which is caused by maintaining the low membership fee. However, I would not advocate raising this fee for any purpose, because I fear many of our good men with small incomes would fall from the ranks because of the burden.

Ambition is the insomnia that prevents a man from resting on his laurels. The fuel bill for roasting people is always costly. We forget much in this world, but no man has forgotten the lesson he learned at his mother's knee and across his father's knee. Caution sometimes spoils a great deal that otherwise would be perfectly good achievement. The man who looks before he leaps usually decides to hunt an easier spot, and ends up concluding he will stay on this side anyhow.

Another suggestion which I have to offer and which might save the State Medical Society treasury a considerable amount of money is to let every section have a "section secretary," elected by the section, this secretary to be responsible for collecting a copy of every paper submitted and turning it over to the secretary of the Society. Along this same line I would also suggest that no discussion be published in the Transactions unless a typewritten double-spaced copy of the remarks of the discusser is placed in the hands of the Secretary or the reporter of the section at the time of the meeting, or forwarded to the secretary of the Society within two weeks after the adjournment of the session.

I wish further to recommend that the executive officers and councilors be constituted the Executive Committee of the State Society.

Giving expression to a deep feeling of responsibility for the doctors over the State of North Carolina, I think we should ask ourselves the following questions at this time:

(1) What is our county society doing towards teaching our members and those concerned with the health activities of our community? (2) Has our society a committee to promote medical education in our community? (3) Has our society any plans under consideration for carrying to the various civic organizations the idea of caring for themselves and their families through the different agencies of organized medicine? (4) Have we any facilities in our county for conducting extension courses, such as meeting places for lecturers, lantern and motion picture machines, or other equipment which would more favorably impress the minds of the

people who are interested in medical extension work? (5) Has our Society a Public Health Committee that is active in public health matters, and active in bringing public health officials and the laity together on important public health matters? (6) Have we used every effort in the By-Laws, chapter 4, section 6? It should be the duty of every member of the society to use his power in trying to get every licensed physician in his county "under medical society influences."

I have been thinking along all these lines during the year, feeling that each county medical society should use every effort to get every individual doctor in the county who is licensed to practice medicine in North Carolina to join the society and enter into and assume the responsibilities of a health promoter in his community under the influence of the Medical Society. I feel that if the State Society would study carefully the history of medical men the need for a Code of Ethics would vanish, the little misunderstandings would be forgotten and the opinion of the public for the members of our profession would be greatly improved.

I wish to recommend that the Constitution and By-Laws be published in our next Transactions together with the Code of Ethics.

Dr. McBrayer, Secretary, moved that the President's message be referred to a committee for consideration. The motion was carried, and the following committee was appointed: Drs. J. P. Munroe, Chairman; C. V. Reynolds, W. L. Dunn, and Thomas E. Anderson.

ANNUAL REPORT OF THE SECRETARY-TREASURER

L. B. McBrayer, M.D., F.A.C.P.

The Secretary has endeavored to perform promptly all the duties required of him.

Program

A program was mailed to all officers and members and to all invited guests one week prior to the meeting. A copy was also sent to the Associated Press and to the leading state daily papers.

Finances

The financial transactions of this office were conducted as per the report attached hereto, which includes a statement of all receipts and disbursements, and same is made a part of this report.

Presumably the term of office of Secretary-Treasurer has not expired, as he was last elected in 1925. An election can be only for a term of three years, although at that time he had served just one year of a three-year term. We are informed that the majority report of the committee on a medical journal, etc., will provide for the establishing of a state society owned or controlled medical journal, and the combination of editor and secretary.

Under such conditions I hereby tender my resignation.

Respectfully submitted.

FINANCIAL STATEMENT

June 9, 1926, to April 14, 1927

RECEIPTS

Balance June 9, 1926	$ 479.11
Dues Collected	4,518.52
Transferred from Savings	1,000.00
Interest on above	39.56
Protested checks made good	157.00
Total Receipts	$6,194.19

DISBURSEMENTS

Check No. 361	J. T. Newman, hotel expenses reporter	$ 20.00
" " 362	J. T. Newman, hotel expenses registrar	16.00
" " 363	D. G. Stutz, express to Wrightsville	2.10
" " 364	Dr. E. P. Brunson, refund dues	1.50
" " 365	Mary Bulla, expenses to Wrightsville	23.65
" " 366	Dr. S. M. Mann, refund dues	3.00
" " 367	D. G. Stutz, express to Wrightsville	1.87
" " 368	Mary Robinson, travel and expenses	63.90
" " 369	Mitchell Prtg. Co., letterheads	15.07
" " 370	Foss & Morris, 2700 programs	108.75
" " 371	City Telephone Co., June account	.90
" " 372	W. U. Telegraph Co., June account	2.70
" " 373	Jas. M. Northington, 6 old Transactions	15.00
" " 374	Mary Robinson, 18 days in office	133.38
" " 375	Void	
" " 376	Mrs. Parker Fisher, 18 days clerical work	66.60
" " 377	W. U. Telegraph Co., July account	4.35
" " 378	Foss & Morris, 2M envelopes	10.50
" " 379	D. G. Stutz, express on stationery	1.84
" " 380	Mary Robinson, 14½ days in office	111.50
" " 381	Mrs. Parker Fisher, 14 days clerical work	53.90
" " 382	Master Reporting Co., reporters '26 meeting	465.85
" " 383	M. E. Slater, 8¾ days clerical work	25.20
" " 384	M. E. Slater, balance due	1.05
" " 385	L. B. McBrayer, salary July and August	100.00
" " 386	Brown Morrison Co., 14M letterheads	76.34
" " 387	Mary Robinson, work on Transactions	122.22
" " 388	Dr. Stuart Mann, refund dues	6.00
" " 389	W. U. Telegraph Co., August account	3.13
" " 390	Foss & Morris, envelopes	.75
" " 391	City Telephone Co., August account	.70
" " 392	Mrs. Parker Fisher, 3½ days clerical work	11.85
" " 393	Foss & Morris, 2C envelopes	2.20
" " 394	D. G. Stutz, express	.95
" " 395	W. U. Telegraph Co., September account	5.12
" " 396	City Telephone Co., September account	.10
" " 397	Brown Morrison Co., 5C letterheads	14.18

" "	398—Mary Bulla, postals	1.00	
" "	399—Mary Robinson, reading proof Transactions	104.94	
" "	400—L. B. McBrayer, sal'y Sept., Oct., Nov., Dec.	200.00	
" "	401—Master Reporting Co., balance due	28.43	
" "	402—L. B. McBrayer, sal'y Jan., Feb., Mch., Apr.	200.00	
" "	403—Dr. I. J. Stoner, refund dues	3.00	
" "	404—W. U. Telegraph Co., Feb. account	31.44	
" "	405—Foss & Morris, 2M membership cards	12.50	
" "	406—Mary Bulla, salary March	135.00	
" "	407—N. C. Tb. Ass'n, postage 3-1-26 to 3-15-27	104.88	
" "	408—Void		
" "	409—D. G. Stutz, express	.83	
" "	410—Dr. E. P. Norfleet, refund dues	3.00	
" "	411—W. U. Telegraph Co., March account	4.91	
" "	412—Bausch & Lomb, stereoptican lamp	3.57	
" "	413—D. G. Stutz, express on Transactions	.77	
" "	414—Mary Bulla, postage for programs	30.00	
" "	415—Morris Eadie, stuffing and mailing programs	4.50	
" "	416—Void		
" "	417—Christian & King, 1700 copies Transactions	2,171.00	
" "	418—Christian & King, postage and mailing	157.95	
" "	419—D. G. Stutz, express on programs	2.48	
	Protested checks	159.00	
	Protest fees	2.50	$4,853.85
Balance April 14, 1927			$1,340.34
Checks outstanding:			
197		$ 1.00	
351		3.00	
410		3.00	
411		4.91	
412		3.57	
413		.77	
414		30.00	
415		4.50	
416			
417		2,171.00	
418		157.95	
419		2.48	$2,382.18
Balance at Page Trust Company, April 1, 1927			$3,722.52

DISTRIBUTION OF EXPENSES

Salary Secretary-Treasurer	$ 500.00
Stenographer and extra help	298.10
Printing and Mailing Transactions	2,328.95
Reporting, editing, indexing, and reading proof Transactions	1,050.22
Programs, stationery, office supplies	243.86
Postage, express, telephone, telegraph	200.07
Refunded dues	16.50

Expenses registrar at Wrightsville	39.65
Old Transactions (to add to file)	15.00
Protested Checks	159.00
Protest Fees	2.50
	$4,853.85

BALANCE SHEET

Balance Operating Account Page Trust Company, April 13, 1927	$3,722.52
Outstanding Checks	2,382.18
Actual Balance Operating Account, April 13, 1927	1,340.34
Savings Account Page Trust Company, April 13, 1927	2,000.00
Total funds available April 13, 1927	3,340.34

March 14, 1927

This is to certify that The North Carolina Medical Society has on deposit with us $3,722.52, subject to check, as of even date.

PAGE TRUST COMPANY,

By Ben S. Oliver, *Assistant Cashier*

April 14, 1927

This is to certify that The North Carolina Medical Society has on deposit with us $2,000.00 bearing interest at the rate of four per cent, as evidenced by our Certificate of Deposit No. 1571, dated October 22nd, 1926.

PAGE TRUST COMPANY,

By Ben S. Oliver, *Assistant Cashier*

Dr. R. S. Beam being the only member of the Finance Committee present, Drs. C. V. Reynolds and R. F. Leinbach were appointed to act with him, and the report of the Secretary-Treasurer was referred to this committee.

REPORTS OF COUNCILORS

First District—Dr. H. D. Walker, Elizabeth City

Since the last meeting of State Medical Society, the First District Medical Society has held three meetings. The Hertford meeting was held October 5, 1926. The Edenton meeting January 20, 1927. Dr. P. P. McCain of State Sanatorium was the invited guest at this meeting and gave us a very interesting and instructive talk on Tuberculosis of children. The Elizabeth City meeting was held April 5, 1927, and Dr. Charles O'H. Laughinghouse, Secretary of State Board of Health, was present and a real message was given not only to the doctors of the First District but also to the Kiwanis and Rotary Clubs of Elizabeth City, Hertford, and Edenton.

At each meeting at least three papers were read by the local physicians of this district. The papers were carefully written and freely discussed by the members.

The annual election of officers were: Dr. John Saliba, Elizabeth City, President; Dr. G. E. Newby, Hertford, Vice-President; Dr. R. L. Kendrick, Elizabeth City, Secretary and Treasurer.

Second District—Dr. G. G. Dixon, Councilor

The second district is composed of some of the best counties in the state. Each county has an active medical society that meets monthly. For that reason we have only one meeting a year of our district society, but we admit that it is the best district society in the state.

Third District—Dr. E. J. Wood, Councilor

I have no report, for which I am very sorry; but I have just come back from Europe. All I can say is that there is no scandal and no dissension and everyone is practicing medicine peaceably, and as a result the chiropractors will have to look to their laurels.

Fourth District—J. G. Grady, Councilor

April 18, 1927.

As councilor of the Fourth District Medical Society, I beg leave to submit the following report:

JOHNSTON COUNTY MEDICAL SOCIETY

The first County Society that I visited was of course my own, that of Johnston. We have I believe as good a society in every respect as any that it has been my privilege to visit. We have 27 Doctors in the county and 26 of them are members of the Society. The Society has regular meetings and a very full attendance at every meeting.

The papers are usually of a very high order and thoroughly discussed. In the beginning of the new year we organized our society into the Physicians Protective Association in order that we might be able to secure a more just compensation for our services which so far has been a great advantage to its members, and materially increased their collections. We did this through the advice of an able lawyer who advised us to have our association incorporated under the laws of the state which give us full legal power to carry out its purposes and so far it has worked very admirably.

NASH COUNTY MEDICAL SOCIETY

On Tuesday, Nov. 9, I visited the Nash County Medical Society at a luncheon given in the Bland Hotel at Rocky Mount. Twenty-five members were present. This is a hustling County Medical Society, presided over by Dr. J. L. Lane. The papers and discussions were of a very high order, especially one on Chorea by Dr. Spencer P. Bass, which was very interesting and thoroughly discussed. There were also several clinical cases reported; also some very interesting X-ray plates exhibited and elucidated by Dr. C. P. Willis of Rocky Mount. This is in every way an interesting and progressive Medical Society of 40 members.

WAYNE COUNTY MEDICAL SOCIETY

On Nov. 12th I was invited by Dr. A. G. Woodard, and met with the Wayne County Medical Society in the dining room of the Goldsboro

Hotel. After a sumptuous feed which was enjoyed by all, the tables were cleared for action and the Society called to order by its President, Dr. W. H. Sutton, and I had the pleasure of listening to several very interesting and instructive papers and discussions. Worthy of especial mention was a paper by Dr. William Morris, of Goldsboro, on the treatment of Bronchitis and Broncho Pneumonia in children. It was a paper full of information and very ably written and presented and provoked a very general discussion among the members.

Another paper of especial merit was one presented by Dr. W. E. Crawford on Uromancy which was well received and freely discussed.

Another very valuable paper was presented by Dr. R. E. Williams, D.D.S., on Nutrition Relative to the Teeth. This was a splendid paper and well received by the Society.

This is a virile and active Society and as heretofore evidences an amazing amount of vigor and pep. I was told they have regular monthly meetings with a good attendance at each one. There are thirty-four doctors in the county and all but two very aged ones are active members.

WILSON COUNTY MEDICAL SOCIETY

This is a society that I am always especially glad to visit, because I am personally acquainted with all the men and always feel perfectly at home among them, formerly having been a member of that Society myself. The personnel of this Society is largely young men who are very thorough and enthusiastic in their work, always having good papers, good discussions, and good clinics. They have members who attend most all the meetings.

EDGECOMBE COUNTY MEDICAL SOCIETY

On April 13th I visited the Edgecombe County Medical Society on invitation of Dr. J. M. Baker, its President. A very interesting paper on Lobar Pneumonia by Dr. Harrell was read and discussed, and among other salient features brought out in the paper was a great value of Diathermy in the treatment of this disease. Dr. J. M. Baker reported several cases in which he had used this method of treatment with brilliant results. There are ten doctors in the County Society, but for some reason they do not meet as regularly as some of the other societies.

There are three other counties in my district that I have not been able to reach, through difficulty in getting in touch with their Presidents and Secretaries, so as to learn their place and time of meeting. Two of these counties are off of a railroad and not so accessible as some of the other counties, but I hope to be able to reach them soon.

RECOMMENDATIONS

It is my opinion that a little closer cooperation between the President and Secretary of the State Medical Society and the Councilors of the several districts that medical interest could be greatly stimulated if the Secretary of the State Medical Society would write the Presidents of the several County Societies to inform the Councilors at what time and place their meetings would be held and invite the Councilors to visit them, because it is almost impossible for the Councilor to meet them without some preconcerted arrangement.

Sixth District—V. M. Hicks, Councilor

There is nothing of any unusual interest to report as to the County Organizations in the Sixth Medical District, but it is with pride that I point to the last District meeting which was held here in Durham on December 2, 1926. A program of this meeting is herewith attached and I ask that it be printed in the Transactions. You will notice upon reading this program that the list of scientific papers will do credit to any Medical Organization. In addition to this a splendid banquet was tendered the District Society by the Durham-Orange County Medical Society. This was an unusually fine banquet and three ex-presidents and the present president were the speakers on this occasion, namely Dr. H. A. Royster of Raleigh, Dr. E. B. Crowell of Charlotte, Dr. Chas. O'H. Laughinghouse, and Dr. Myers.

There is an unusually fine spirit existing in the Sixth Medical Society District Organization, and I have been repeatedly told by members that they got more out of this meeting than any other medical meeting they had attended.

On account of the State Meeting coming in our District, and at about the same time at which the District would normally have its meeting, the Spring meeting has been postponed, but it is our rule now to have two meetings a year.

Seventh District—Dr. T. C. Bost, Councilor

The annual meeting of the Seventh District Medical Society was held in Shelby, N. C., October 12, 1926. This was a very interesting and instructive meeting. Eighteen papers were read and fully discussed. Over a hundred members were present. Dr. J. Q. Myers, President North Carolina Medical Society was present and made a very instructive talk.

A banquet was given to the Society by the Cleveland County Medical Society, which was greatly enjoyed and highly appreciated by the members.

Dr. E. B. Lattimore, Shelby, was elected President, Dr. R. H. Crawford, Rutherfordton, N. C., Vice-President, and Dr. Raymond Thompson, Charlotte, N. C., Secretary. The next meeting will be held in Rutherfordton in 1927.

I have visited all of the County Medical Societies in the District and find that they are all organized and are holding regular meetings except in Anson and Lincoln counties. These counties, however, are organized, but do not seem to be actively functioning, owing to a small membership. Lincoln County, together with two adjoining counties, has formed a Tri-County Society which holds regular meetings. The members of the Anson County Medical Society attend meetings in the surrounding counties. Most of the counties have a comparatively small membership, except Mecklenburg and Gaston counties, but practically all of the doctors in the district belong to their County Societies.

A spirit of harmony and cooperation prevails among the men and much interest has been shown in the Medical Societies during the year throughout the District.

Eighth District—Dr. Frederick R. Taylor, Councilor

As has been the custom in previous reports, this one deals only with the year immediately past, and if any matters are mentioned which are not in themselves clear because they refer to material in previous reports, consulting those reports will make the present report more intelligible.

Ashe County. Visited W. Jefferson Nov. 8, 1926. The two men mentioned in last year's report as having located in Ashe without a license from the State Board are still practicing there, according to Drs. Ray and Reeves. Your councilor very strongly urged these regular practitioners to make affidavits concerning this matter and forward them to the Secretary of the State Board of Medical Examiners. The Secretary was also informed of the situation, and he expressed every willingness to take immediate action against anyone practicing medicine in the state illegally, if he could get competent evidence to that effect. Although he has had considerable correspondence as well as conversation on the subject, your councilor has not heard of definite evidence having yet been submitted so that action could be started against the two men. The limited license men also seem to be getting to be more of a problem. According to Drs. Ray and Reeves, some of them are now located in West Jefferson, and are doing an inferior grade of medical work at low prices to the detriment of public health and of the properly qualified practitioners. This matter was also brought to the attention of the Secretary of the State Board of Medical Examiners, but naturally he cannot take any definite action until adequate evidence of violation of the law can be obtained. (Note: Dr. Taylor later reported having heard that the two men who had been practicing illegally in Ashe County had left the county.)

Wilkes County. Visited Wilkes Nov. 8, 1926, and had a conference with Dr. Frank H. Gilreath, President of the Wilkes County Medical Society. Things are going along very satisfactorily in Wilkes. The man whose membership had never been transferred to Wilkes attended the meeting immediately previous to this conference and agreed to bring a letter to the next meeting from the Iredell-Alexander Society requesting a transfer to Wilkes. Dr. Gilreath stated that there had previously been a good deal of newspaper publicity given to the Wilkes Hospital which had been objected to by physicians not associated with the hospital. While the proprietor of the hospital does not seem to have been responsible for this, the other doctors are gratified that he has recently requested that this publicity be stopped, and his request seems to have been effective. A letter from Dr. Gilreath dated Jan. 7, 1927, states that the physician referred to above has joined the Wilkes County Medical Society by transfer from Iredell-Alexander. Unity, peace, and concord seem to be fully established, and Wilkes is rapidly forging ahead in its society work.

Yadkin County. Visited Yadkin Nov. 8, 1926. The county is still without a medical society, and conditions appear to be the same as last year, according to Dr. Harding, who was interviewed. There are few doctors in the county, one man having left the past year, and one having

come in. It seems impossible so far to get enough men together to hold a county society meeting and get anything started.

Alleghany County. Visited Sparta Nov. 8, 1926. Was again unable to see Dr. Doughton, as he was not at home at the time of the visit. Saw Dr. Choate, and learned from him that conditions in the county are virtually unchanged since last year. There is no county medical society in Alleghany, and apparently no immediate prospect of getting one, for reasons outlined in last year's report.

Surry County. Attended a meeting of the Surry County Medical Society at Mt. Airy on Nov. 9, 1926. There was a good attendance of Mt. Airy men. There had been a heavy rain all morning, and this prevented men from other towns from attending. Surry is unfortunate in that the two chief towns, medically speaking, Mt. Airy and Elkin, are so far apart that it is difficult for men to get from one town to the other to attend meetings, especially in bad weather. This state of affairs was probably responsible for the fact that there were no scientific papers at the meeting. Your councilor was requested to make a few remarks, which he did, emphasizing the need of an active program committee, and for beginning meetings on time, and going into a general discussion of medical matters in the county. Contract physicians seem to be still giving a good deal of difficulty, and, according to members of the medical society, are not only distasteful in their activities to the other physicians in the county, but do not appear to be giving unqualified satisfaction to their employers. This may result in a solution of the problem in the near future. Mr. Robert A. Smith, representing the Engeln Electric Co., attended the meeting, and on the request of the president gave an interesting talk on some technical pitfalls in X-ray interpretation. Especially interesting was the report of the case of a man who was actually on the operating table being prepared for an operation for a stone in the kidney. The X-ray plate, however, showed the shadow of the supposed kidney stone near the front of the abdomen. Further investigation showed the shadow to be due to some old bismuth paste that had been injected in a sinus following a stitch abscess after an appendectomy some time previously. Defects in plates, and a case of an unerupted supernumerary tooth were also interesting features of Mr. Smith's talk. In general, Surry seems to have a pretty active county society so far as the holding of regular meetings goes, and the members of the society are working in harmony and doing good medical work.

Stokes County. Visited King Nov. 9, 1926, and saw Drs. Stone and Helsabeck. According to Dr. Stone, county society work in Stokes is at a pretty low ebb. There is very little interest taken in it, and meetings are not regularly held. The sparse population of Stokes seems to be the chief explanation for this, as the doctors are few and far between. The lapse of time with an increase of population seems to be the only adequate remedy for this situation.

Rockingham County. Attended a meeting of the Rockingham County Medical Society held in Reidsville on March 23, 1927. It was a sort of reorganization meeting, as it is customary in Rockingham not to have meetings during the winter season, as the members are so scattered, being in Reidsville, Leaksville, Spray, Madison, and elsewhere. Officers were

elected for the ensuing year as follows: President, Dr. A. F. Tuttle of Spray; Sec'y-Treas., Dr. Kenan Casteen of Leaksville. Rockingham seems to be continuing an active interest in medical society work. Plans for the coming year were discussed with interest. One member made a talk rather adversely criticizing certain members of the State Board of Health, and included in his remarks a good deal of disapproval of the recent sending of a flood of telegrams by doctors from all over the state, opposing the passage of the Parker bill, designed to change the personnel of the State Board of Health and the method of selection of it. Being one of those who had sent such telegrams and worked rather actively in opposition to the Parker bill, your councilor felt it only fair to state his position in this matter, which he did, trying, however, to do so in a spirit of fairness and tolerance, with no desire to be dogmatic, or to attempt to suppress any sincere criticism of any organization, however adverse, but merely with a view of bringing out what seemed to him important principles at stake in the matter.

Randolph County. No formal visit to Randolph was made during the past year, though your councilor has been in the county a number of times and talked with some of the physicians therein. The Randolph County Medical Society seems to be, if not dead, at least in a state of suspended vital activity for the present. This is very unfortunate, and is perhaps a reflection not only on the lack of cooperation among the members of the Randolph profession, but also on your councilor's ability to get results, for there are certainly enough good men in Randolph to make up an active society if they could only be welded together in a working organization. However, all medical society activity on the part of Randolph doctors is not dead, for a number of the more enthusiastic ones have affiliated with Guilford County Society and attend its meetings as regularly as possible. This arrangement has been approved by your councilor, for however much of a makeshift it is, it seems to be the only solution of the problem for the present. Guilford is, of course, very glad to have the Randolph men in her society, but for Randolph's sake, it is very much hoped and desired that an active Randolph County Medical Society may soon again be a fact.

Forsyth County. On March 8, 1927, attended a meeting of the Forsyth County Medical Society at the Blue Willow Tea Room in Winston-Salem. Despite the fact that the President and Vice-president were unable to attend, the President being ill, and that the member chosen to read a paper was also absent, an excellent meeting was held, following an equally excellent dinner. The attendance was good. In lieu of a set program, many cases of great interest were reported and discussed by those present. The average attendance at meeting for the year seems to have diminished somewhat, owing to the many hospital staff meetings held in the city, and there was some discussion of ways and means of remedying this situation, a committee being appointed to study the problem and report later.

Guilford County. Guilford has been decidedly active the past year. There has been more interest on the part of High Point physicians than previously. Much interest has been taken in trying to educate the public

to appreciate the value of periodic health examinations. The district meeting was held in Greensboro on November 4, 1926. There were thirteen papers on the scientific program. Many of these papers were excellent, but unfortunately, the program was so long that four of them could not be read. A number of men from outside of the district were present and took part in the program. Dr. John Q. Myers, President of the Medical Society of the State of North Carolina, made an address. Dr. J. Shelton Horsley of Richmond gave a talk on cancer of the stomach. Dr. W. Estell Lee of Philadelphia gave an illustrated lecture on the treatment of carbuncles. Dr. H. W. Plagemeyer of Detroit spoke on the prostate gland in its relation to the general practitioner. Dinner was served at the Greensboro Country Club. Here the beloved Dr. Cyrus Thompson of Jacksonville gave one of his matchless speeches on the Fine Art of Living. Mr. E. S. Parker, a Greensboro attorney, also gave an interesting address on certain medico-legal topics. High Point was selected as the next meeting place; and the officers elected for the meeting there were: President, Dr. Frederick R. Taylor; Vice-president, Dr. D. A. Stanton; and Secretary, Dr. Harry L. Brockmann.

SUMMARY

The work of the district as a whole does not seem to have shown any very marked gain or loss. In the main it has been fairly satisfactory, though there is much room for improvement, especially when certain rural counties get a larger medical population. For the most part, these counties are really unable at present to keep up active county societies, for where only three or four doctors are eligible for membership and two or three of them busy at the time of a meeting, one cannot expect great enthusiasm in working up scientific and social activities. The greatest advance has been made in Wilkes County, the physicians there having made a real achievement in reorganizing and reenergizing their society by forgetting the things that have gone before and pressing forward to real cooperative scientific medical work. One county, Randolph, apparently will not, rather than cannot, keep up an active society at the present time—at least in time past, when there were fewer physicians and far worse roads in the county, they had an active society, and it is difficult to see why such an organization cannot be maintained today. In at least one county, hospital staff activities seem to have more or less outstripped county medical society work to some extent. On the whole, however, the medical work of the district seems to have progressed apace with the general development of the section, and an optimistic faith in the future of the district seems amply justified.

Ninth District—Dr. M. R. Adams, Councilor

The annual meeting of the Ninth District Medical Society was held in Mocksville October 25, 1926. The meetings of this district are growing in interest and popular favor and bring a larger representation each year. There being at the last meeting the largest number present in the history of the Society—approximately one hundred and fifty doctors being present—the program was most excellent. A number of up-to-date and highly scientific papers were read and discussed. Dr.

J. Q. Myers, President of the State Medical Society, was an honor guest and delivered a very interesting address.

A splendid dinner was given by the Davie County Medical Society which was very greatly enjoyed.

The officers elected for the ensuing year were: President, Dr. A. B. Byerly, Cooleemee, and Dr. James W. Davis, Statesville, Secretary.

The Society accepted an invitation to meet with the Caldwell County Medical Society next fall at Lenoir.

I have not been able to visit all the counties in the district, therefore I am not able to make a detailed account in the entire district.

Tenth District—Dr. A. T. Pritchard, Councilor

I desire to submit the following report for the past year's activities of the Tenth District. This district is composed of the following counties: Buncombe, Cherokee, Clay, Macon, Haywood, Henderson, Jackson, Madison, McDowell, Polk, Graham, Swain, Transylvania, and Yancey.

When I took over the work as Councilor the following counties had no Medical Organizations: Swain, Transylvania, Yancey and Graham. I have been able to organize a Society in Yancey County which is active and doing good work. Transylvania County was to meet and organize but it developed, at the last minute, that I could not possibly attend. Requests for reports from this county have not been forthcoming. All of the other counties in the District have good Societies and seem very much interested in their work with the exception of Clay and Macon. I have repeatedly written the officers of these counties and have had no response from them.

I desire to recommend that, in view of the small number of doctors in the following counties, they be combined in Medical Societies, three counties to the Society, and that the societies be formed, one of Swain, Macon, and Jackson, and another of Clay, Graham, and Cherokee.

It is my pleasure to report that the conditions, generally speaking, in the Tenth District, are quite satisfactory but I feel that it is important to combine the counties as indicated in order to create larger societies and renew their interest.

Dr. C. V. Reynolds moved that Dr. Pritchard, Councilor for the Tenth District, be given permission to carry out his suggestions outlined in his report as to consolidating certain county societies. The motion was carried.

On motion of Dr. McBrayer, the reports of the councilors were accepted.

MESSAGES OF SYMPATHY

Dr. Cyrus Thompson stated that Dr. E. G. Moore, of Wilson, was unable to be present because of illness and moved that the condolence of this body be telegraphed to him by the Secretary, with our abundant hope for his speedy recovery. Motion seconded by Dr. J. M. Northington and Dr. Carl P. Parker and carried.

Dr. McBrayer moved that a like telegram be sent to Dr. Hubert A. Royster, who was also absent because of illness.

Motion seconded by Dr. Thompson and carried.

(Note: These telegrams were sent by the Secretary.)

REPORTS OF COMMITTEES

AWARD OF MOORE COUNTY MEDICAL SOCIETY MEDAL

Dr. W. C. Mudgett, Chairman, made the following informal report:

As this is the first meeting after the acceptance of the Moore County Medical Society's offer, the medal has not been awarded. I think probably it will be awarded to some paper read at this meeting rather than for a paper not read before the State Society, because our purpose in giving it was to stimulate interest in the State Society.

PERIODIC MEDICAL EXAMINATION OF THE APPARENTLY HEALTHY

Dr. Harry L. Brockman, Chairman, made the following report:

The first time this matter of periodic medical examinations was taken up actively by this Society was last year. Following that meeting several articles appeared in various publications—"Southern Medicine and Surgery," "Constructive Medicine," and the Bulletin of the State Board of Health. So far as I can learn, no active work has been done in periodic medical examination in the state except in Guilford County. The work done there will be described fully tomorrow morning in the Section on Public Health and Education. Guilford County had a series of six meetings in which the periodic health examination was demonstrated by members of the society. Following this, it is the plan of the society to give the subject more publicity, in order to encourage people to come in for such examinations. The committee desires to present the Guilford County plan to this Society before suggesting it to other counties, and that will be done in a paper to be read before the Section on Public Health and Education tomorrow morning. That is as far as this committee has acted. In fact, we have had no meeting but have corresponded about this matter.

PROPOSED ENDOWMENT FOUNDATION

Dr. James M. Parrott, Chairman, read the following report:

To the House of Delegates, North Carolina Medical Society,
Gentlemen:

During the recent winter our learned President, Dr. J. Q. Myers, appointed a committee to consider the wisdom and advisability of establishing an Endowment Foundation for the North Carolina Medical Society. This committee has given the matter careful thought and investigation and submits the following report:

First. It is evident that a foundation of sufficient size when wisely invested, carefully safeguarded and properly directed would be of inestimable benefit to the people of the commonwealth and the profession.

Second. The committee is of the opinion that an effort should be made to create a foundation and that it can be done by asking for voluntary contributions from both the laity and the profession; that its future probably can be cared for by urging individuals to carry life insurance, provide for it in wills, and other ways; that the foundation should be invested in part in safe securities and in part in a fireproof building. We think the income from the foundation should be used to defray the

expenses of a whole-time Executive Secretary; for the direction of medical activities in the State, including the distribution of medical literature for the education of the public; the publication of the annual volumes of the State Medical Society; colportage work, cooperation with the State Board of Medical Examiners; discharging the duties of the Sec'y-Treas. of the State Medical Society; providing study and post-graduate clinics and coordinating and fostering various plans which may be of service to the profession and the people. We are further of the opinion that a part of the Trust should be invested in a fireproof building where the offices of the whole-time secretary can be maintained and the Archives and other valuable professional matters safely preserved.

Third. In order that the perpetuity of the Endowment may be guaranteed so far as is humanly possible, and to be sure that its finances are wisely kept and invested, we think the endowment should be placed in the hands of a strong trust company for administration. In order that the expenditures may be along such lines as the profession of the State may deem wise and best, we believe the disbursement of the income from the Trust should be directed by a committee elected by the State Society in such a way and time as may be provided later.

Fourth. The committee does not think that it has sufficient information or had time to properly mature, in detail, the plans for procuring and handling the foundation and offers the above only as suggestions.

Fifth. We think that the matter is of sufficient importance to justify further study and investigation and we urge that the present President of the State Society be authorized and directed to appoint a committee of five to give the matter of establishing a foundation further thought and report at the next meeting outlining specific plans and purposes in detail.

M. S. Stevens
L. A. Crowell
James M. Parrott, Chairman
John T. Burrus
J. P. Matheson

On motion of Dr. Cyrus Thompson, the report was accepted and the committee continued.

JOURNAL AND WHOLE-TIME SECRETARY

Dr. L. B. McBrayer, a member of the committee, said that the committee had both a majority and a minority report to present and then read a telegram from Dr. H. A. Royster, chairman of the committee, stating that he was detained at home because of illness and asking that the report of the committee be deferred. Dr. Ben J. Lawrence moved that Dr. Royster's request be granted, and the motion was seconded by Dr. Cyrus Thompson. The motion to defer the report and continue the committee was unanimously carried. Dr. Northington rose to a point of personal privilege to explain that the report was not his but that of a majority of the committee and asked to have this entered in the minutes.

GLASCOCK-WAKE COUNTY CONTROVERSY

Dr. J. M. Parrott, Chairman, stated that Dr. J. H. Harper had been appointed by the President as a member of this committee, on the committee's recommendation, to succeed Dr. J. W. Long, deceased. He then read the following report:

To the House of Delegates of the North Carolina Medical Society: Gentlemen:

Your Committee appointed at the Pinehurst meeting, April, 1925, to consider and "to try to settle" the Wake County Medical Society-Dr. Harold Glascock matter (see page 116, Transactions State Medical Society, Pinehurst meeting, April, 1925) begs leave to make the following report:

First. We have studied this problem diligently and have investigated the problem carefully during the recent two years, both individually and collectively; we have made reasonable efforts to settle the matter amicably and satisfactorily and have been unable to do so.

Second. We are of the opinion that the State Society should exercise an advisory supervision over the actions of a society in passing on the qualifications of an applicant for membership and that the State Society is well within its constitutional rights and easily within the bounds of wisdom when it essays to do so; we understand and believe that the State Society, through its proper officers, has expressed its opinion and its wishes concerning the Wake County Medical Society-Glascock controversy. We think the large membership of the Wake County Society and the always overwhelming majority by which it has more than once acted in this matter emphasize the importance and clearly direct the application of the wise and well nigh universally accepted doctrine of local self-government to this case, and we now advise that this controversy be referred to the Wake County Society for final disposition.

(Signed)

Foy Roberson
A. J. Crowell
J. G. Murphy
J. H. Harper
James M. Parrott, Chairman

Dr. Parrott stated that he would yield the floor only for questions. Dr. G. H. Macon moved to accept the report, and Dr. N. C. Daniel seconded the motion. The report was discussed by Drs. G. H. Macon, Ivan Proctor, J. M. Templeton, J. P. Munroe, Dr. Templeton again, Drs. A. A. Kent, C. P. Parker, R. F. Leinbach, B. J. Lawrence, F. R. Taylor, Dr. Templeton again, Drs. J. B. Wright and W. A. McPhaul, Dr. Kent, Dr. Wright, and Dr. Munroe again, Drs. G. G. Dixon, M. C. Horton, and Cyrus Thompson, and Dr. Leinbach again. Dr. J. L. Spruill moved to table the report, which motion was seconded. Dr. W. L. Dunn made a point of order that Dr. Parrott had not yielded the floor except for questions and therefore the motion to table was not in order. The President ruled the point of order well taken. Dr. Parrott then closed the discussion, and when put to vote the report was accepted.

PROPOSED AMENDMENT TO BY-LAWS

Dr. J. M. Parrott, Chairman, said that the committee had not had time to prepare a report and asked that the committee be continued, which request was granted.

SELECTION OF NOMINATING COMMITTEE

During an intermission the delegates for each district met and selected a member of the Nominating Committee. The following were selected:

First District ..... Dr. R. L. Kendrick
Second District ..... Dr. Ben F. Royal
Third District ..... Dr. Cyrus Thompson
Fourth District ..... Dr. C. P. Parker
Fifth District ..... Dr. W. C. Mudgett
Sixth District ..... Dr. N. C. Daniel
Seventh District ..... Dr. J. P. Munroe
Eighth District ..... Dr. J. L. Spruill
Ninth District ..... Dr. C. A. Julian
Tenth District ..... Dr. C. V. Reynolds

The House of Delegates then adjourned to meet Wednesday evening.

Wednesday, April 20

The House of Delegates reconvened at 8:30 p. m. and was called to order by the President.

The reports of the councilors for the Seventh District and the Ninth District were read and approved. (These appear in the minutes of the Monday evening session.)

The Secretary read the following telegrams:

Wilmington, N. C., April 19, 1927

Dr. L. B. McBrayer, Secretary,
State Medical Society,
Durham, N. C.

Had planned to be with you today. Regret being unavoidably detained. Best wishes to the Society.

W. Houston Moore.

Birmingham, Ala., April 19, 1927

North Carolina State Medical Society,
In Annual Convention Assembled,
Washington Duke Hotel, Durham, N. C.

Greetings. Hope you are having a most successful meeting.

Southern Medical Association.

REPORT OF FINANCE COMMITTEE

The following report of the Finance Committee was presented and approved:

Washington Duke Hotel,
Durham, North Carolina,
April 19, 1927.

Your Committee begs to advise that it has audited the financial report of the Secretary-Treasurer and finds it correct and in balance. We take

this occasion to commend the Secretary-Treasurer for his economical administration of the affairs of the Society.

Respectfully submitted:

R. S. Beam, Chairman
C. V. Reynolds

The President appointed Drs. L. B. McBrayer, R. L. Felts, and Charles O'H. Laughinghouse as a committee to visit Dr. J. M. Manning, Mayor of Durham, who was detained at home by illness. (Note: This committee called on Dr. Manning on Thursday morning, April 21st.)

Dr. J. M. Templeton entered a protest against the action of the House of Delegates in the Glascock-Wake County matter as illegal and unconstitutional, and later submitted the following as his protest in detail and in full:

Raleigh, N. C., April 20, 1927

North Carolina State Medical Society,
House of Delegates,
Dr. L. B. McBrayer, Secretary

Confirming our protest made at the meeting of the House of Delegates April 20, 1927, at Durham, N. C., in reference to the action of the House of Delegates April 18, 1925, in the Glascock-Wake County Medical Society controversy, we wish to submit the following:

1. That the committee appointed by the House of Delegates at the Pinehurst meeting April, 1925, to investigate and try to settle the Glascock-Wake County Medical Society controversy, was without constitutional authority and illegal. This position is substantiated by the statement of the chairman of the committee in his talk before the House of Delegates when the recommendation was made, that this committee was without authority and extra judicial.

2. That the committee made its investigation under protest on the part of Ex-Councilor Dr. James M. Templeton, and other members of the State Society and the physicians seeking membership. When due request was made for a stenographer to take the testimony presented before the investigating committee, this was refused. When the physicians in question asked that they be allowed the privilege of facing their accusers, this was refused. The physicians in question urged that they be allowed to answer directly accusations thrust against them and this was refused. Certain members of the Wake County Medical Society that were present when the physicians seeking membership went before the committee were refused the privilege of being present when their own County Society presented its side of the controversy.

3. The chairman in the oral part of his report indorsed the action of the Council in this matter and recommended enrollment of the physicians in the Wake County Medical Society.

4. The House of Delegates have failed to perform its duties as set out in the last sentence, Chapter IV, Section 6, in the Constitution.

"The House of Delegates shall especially and systematically endeavor to promote friendly intercourse between the physicians of the same locality and shall continue these efforts until every physician in every county

of the State who can be made reputable, has been brought under Medical Society influence."

5. The adoption of the investigating committee's report destroys the action and authority of the Council in this and all other matters as set out in the last two sentences of Chapter VIII, Section 3, in the Constitution.

"It shall hear, and decide all questions of discipline affecting the conduct of members, or of a county society, upon which an appeal is taken from the decision of an individual councilor. Its decision in all such cases shall be final."

6. When the vote was taken on the committee's report, the room was filled with members of the Society who were not delegates and there was no check made to be sure that those voting had the authority to do so. Several physicians present have informed us that in their opinion there were more rejecting the report than favoring it.

(Signed) J. M. Templeton,
Ex-Councilor Sixth District

Copy to: Dr. J. T. Burrus, Pres. N. C. Medical Society; Dr. J. Q. Myers, Past Pres. N. C. Medical Society.

REPORT OF COMMITTEE ON PRESIDENT'S ADDRESS—DR. JOHN Q. MYERS

The committee presented the following report, which was accepted:

The President has presented a very comprehensive review of medical affairs in the State and makes some suggestions which we wish to present for your consideration.

1. He makes a proper reference to the Medical Department of Duke University and the Hospital Section of the Duke Endowment. These with the unlimited resources at their command are destined to revolutionize medicine in our section and accomplish great things, not only for the two Carolinas, but the entire South, and for scientific medicine throughout the world.

2. We would endorse the President's suggestion for the establishment of rural hospitals. We believe this can be done by cooperation with the Hospital Section of the Duke Endowment with our own Doctor, W. S. Rankin, as its head.

3. *Medical Foundation:* The committee appointed to consider this subject has already made a full report and we understand that in endorsing the principles involved in that report, and in continuing that committee through the House of Delegates, expects said committee to continue in their work in getting up a complete plan and present it to a future meeting of the Society.

4. *Teach and Preserve Medical History of North Carolina:* We heartily endorse the President's suggestion that our members should be given every encouragement to do research work and to present specimens, photographs and papers in such form that they may be preserved as permanent exhibits.

5. As a commendable step in this direction the President referred to the Trust Endowment established by the Moore County Medical

Society. We recommend that the President of this Society appoint a committee of three each year and award the medal contemplated in this endowment.

6. *Standardization of Specialists:* In a sense the ideal involved in this suggestion is partly attained by the care used in selecting men to fill certain positions in hospitals, Health Boards, etc. The development of a specialty is often a gradual and prolonged process. Moreover when one considers the present high standards of medical colleges and of our State Board of Medical Examiners, your committee does not believe the time is ripe for placing any additional barrier in the way of a duly qualified physician who may wish to specialize in some particular line. We are quite agreeable, however, to the President's suggestion that a committee be appointed during this meeting to study the question and report at our next annual meeting. We recommend, therefore, that a committee of three be appointed and the President John Q. Myers be designated a fourth member of said committee.

7. *President's Cabinet:* The idea involved in the President's recommendation here we heartily approve. We believe, however, that it would be more in harmony with our plan of organization if the councilors should be designated as members of said cabinet to perform the functions indicated in the President's address. As alternative to this if it is desired to get a larger body and get more closely in touch with the medical profession in general we would suggest that the Presidents of the various County Societies be designated members of said cabinet, and that they, or the councilors, as the case may be, be authorized and instructed to act as cabinet to the President.

8. *Periodic Health Examinations:* We heartily endorse the President's idea in emphasizing the importance of this subject. In the desire to maintain a high standard of medical ethics our profession is inclined to limit in the matter of bringing matters of this kind before the public. We applaud to the limit any distinguished surgeon or physician from a distant state or from a noted clinic, who comes to our city and makes a semi-popular address to which laymen are invited. We have no scruples about endorsing the syndicated articles appearing in the daily papers over the signatures of distinguished visitors, and yet, if any one of our own North Carolina doctors should happen to appear before the general public, either as a speaker in any capacity or as a writer on any subject of a medical nature, there are those who will at once attempt to ascribe to him improper motives and lack of proper ethical standards. These things ought not so to be.

We recommend the approval by the President of the good work already done along this line by Guilford County Medical Society. We recommend furthermore that each county Society be authorized, and encouraged to bring before the general public the importance of "Periodic Health Examinations," especially for those past the middle age of life.

In the opinion of your committee this should be done somewhat after the plan of the Brooklyn Board of Health in the use of properly worded posters, public addresses and health articles in the secular press.

Respectfully submitted,

Committee:
J. P. Monroe,
T. E. Anderson,
Carl V. Reynolds

On motion of Dr. Cyrus Thompson, the privileges of the floor were extended to Dr. W. S. Rankin, who submitted the following resolution:

Whereas, the Attorney General of the State of North Carolina was recently requested by the Governor of North Carolina to investigate and report his findings with reference to recent charges of the taking of graft by certain officers of the State Board of Health; and

Whereas, the Attorney General has reported to the Governor that he was unable to proceed with such an investigation for lack of evidence; and

Whereas, the Attorney General has summoned no witnesses, placed them under oath, and required them to testify; and

Whereas, from statements made today by a member of the State Board of Health in the Conjoint Session of the Board and the State Medical Society it is believed that the names and addresses of witnesses material to such an investigation are available; now, therefore

BE IT RESOLVED that this House of Delegates do respectfully request the Governor of North Carolina to repeat his request of the Attorney General and respectfully insist upon a thorough investigation by the summoning of such persons as have or may have knowledge of the taking of graft by certain officers of the State Board of Health and by requiring such persons to be placed under oath and to testify as to their knowledge of the aforesaid charges, in order that any person found guilty of such charges may be punished and the fair reputation of the North Carolina State Board of Health placed above reproach.

W. S. Rankin,

Durham, N. C., April 20, 1927.

Motion to adopt the resolution; seconded. The matter was discussed by Dr. B. J. Lawrence, Dr. W. S. Rankin, and Dr. C. E. Reitzel. Dr. Reitzel moved to table the resolution; Dr. Lawrence seconded. The motion to table was lost, and the resolution was adopted.

Dr. Rankin then submitted a second resolution, as follows:

BE IT RESOLVED that it is the sense of the House of Delegates of the Medical Society of the State of North Carolina that the introduction in the General Assembly of North Carolina of 1927 of legislation designed to seriously disturb that basic principle of the organization of the State Board of Health, which for a period of fifty years has been effective in minimizing the influence and uncertainty of partisan politics on public health policies and practices in our State, is to be seriously regretted; and

BE IT FURTHER RESOLVED that this House of Delegates, here and now, expresses the earnest hope that a repetition of the introduction of such legislation will not again occur.

W. S. Rankin,

Durham, N. C., April 20, 1927.

Dr. N. C. Daniel moved to adopt the resolution, which motion was seconded. The matter was discussed by Dr. B. J. Lawrence. The resolution was adopted.

REPORT OF NOMINATING COMMITTEE

Dr. Cyrus Thompson presented the following report of the Nominating Committee, which was accepted:

Your Nominating Committee begs leave to recommend the following report for your consideration:

OFFICERS 1927-28

President—Dr. John T. Burrus ..... High Point
First Vice-President—Dr. G. H. Macon ..... Warrenton
Second Vice-President—Dr. R. F. Leinbach ..... Charlotte
Third Vice-President—Dr. W. R. Griffin ..... Asheville
Secretary-Treasurer—Dr. L. B. McBrayer ..... Southern Pines

Delegates to the Medical Society of Virginia:

Dr. L. S. Booker, Durham; Dr. Henry W. Lewis, Jackson; Dr. L. W. Elias, Asheville; Dr. H. L. Brockman, High Point.

Delegates to the South Carolina Medical Society:

Dr. R. L. Pittman, Fayetteville; Dr. E. R. Hardin, Lumberton; Dr. R. T. Ferguson, Charlotte; Dr. Guy E. Dixon, Hendersonville.

COMMITTEES:

Committee on Public Policy and Legislation:

Dr. K. P. B. Bonner, Morehead City, *Chairman;* Dr. J. M. Parrott, Kinston; Dr. W. M. Jones, Greensboro.

Place of Meeting: Pinehurst, 1928.

John P. Munroe, Charlotte, *Presiding*
Cyrus Thompson, Jacksonville
J. L. Spruill, Jamestown
O. C. Daniels, Oriental
C. P. Parker, Seaboard
Ben F. Royal, Morehead City
W. C. Mudgett, Southern Pines
Carl V. Reynolds, Asheville
C. A. Julian, Thomasville
R. L. Kendrick, Elizabeth City

CORRECTION OF RECORDS

Dr. C. A. Julian asked that Dr. A. A. Kent be recorded as having joined the State Society in 1894 and as having paid his dues for 1895,

1896, 1897, 1898, and 1899, he having receipts covering those years. Dr. Cyrus Thompson moved that the records be so amended. Motion seconded by Dr. A. J. Crowell and carried.

CHANGE OF SCIENTIFIC SECTIONS

The Secretary reported that in the opening session a motion was made by Dr. R. T. Ferguson to have the scientific sections of the Society limited to two, one to be denominated surgery and one medicine, the motion having been referred to the House of Delegates. Since any change in the scientific sections would necessitate changing the by-laws, the matter was referred, on motion, to the Committee on Proposed Amendment of By-Laws.

REPORT OF COMMITTEE ON CENTRALIZATION OF STATE INSTITUTIONS

Dr. R. L. Felts read for the committee the following report:

RECOMMENDATION

The Committee on Centralization of State Institutions appointed by our President at the Wrightsville Beach convention of the Society last year, begs leave to submit the following report:

We have made a careful study of this subject and have sought advice from various sources in the State in regard to its feasibility as an objective for the Society's consideration and action. Your Committee has arrived at the conclusion that the suggestion has much merit and is worthy of the most careful consideration by this Society, and we recommend that the Society endorse the idea, which it will be remembered, was presented in President McNider's address a year ago.

In general the idea recognizes the great value that is to accrue to the state by reason of the Medical College to be established in connection with Duke University and seeks to take advantage of that by centralizing such state institutions as is found of practical benefit to do so around this medical college, thereby accomplishing a three-fold benefit:

1. It would enable the inmates of such state institutions to have the benefit of the best available specialists in the treatment of their ills;
2. That it would be of benefit to the medical college by affording needed clinical subjects;
3. It would be of economical benefit to the state by having available at all times the services of a staff of specialists, making it unnecessary, as is now sometimes the case, of transferring inmates to distant hospitals for emergency treatment of a different nature from that given by the institution.

In those three general advantages your committee finds that the suggestion is one of merit and worthy of the earnest consideration of the Society.

But your Committee also realizes that there are certain obstacles in the way of the immediate carrying out of that centralization plan even were it adopted at this time. The institutions of the State which would be involved in any centralization scheme are now permanently located, and it would be inadvisable and uneconomical to make a complete physi-

cal transference of them. We are also appreciative of the fact that it would be several years before the Medical College of Duke University will be ready to function in its proposed capacity, and, that therefore, any plan for centralization will necessarily have to be delayed until the Medical College is prepared to meet the responsibility that would devolve upon it by reason of that grouping of state institutions around it.

We are also appreciative of the growing condition of the state's institutions in the future, which will make necessary the addition of units to their physical plant, and in some cases it may not be desirable or practical in nature to place these units on the sites now occupied by the plants of those institutions, in which event it is our opinion that the suggested centralization can be taken up and put into effect.

Your committee finds so much value in the proposed plan that we recommend that this committee be continued, or a new committee appointed, to keep up the necessary contact between the Society and whatever developments along this line may come in the next year or next several years.

Respectfully submitted,

Robert L. Felts,
P. P. McCain,
W. H. Dixon,
E. J. Wood,
Foy Roberson,
C. A. Woodard,

Committee on Centralization of State Institutions.

On motion of Dr. A. J. Crowell, seconded by Dr. Cyrus Thompson, the report was received as information and the committee was continued.

COMMITTEE ON PACKAGE LIBRARIES FOR PHYSICIANS

Dr. Foy Roberson, Chairman, made the following report:

The appointment of this committee was brought about by the address of Dr. H. W. Chase, President of the University of North Carolina, at the meeting at Pinehurst in 1925. We have gone into this proposition carefully and find that it would entail a probable cost of $2,000 or more. We are heartily in sympathy with the idea and consider it a fine project, but owing to the fact that there are no funds available for use either by the University or the State Medical Society and owing to the further fact that other conditions may develop within the next year or so, the committee recommends that action be deferred for a time.

The report of the committee was accepted and the committee continued.

REPORT OF COMMITTEE ON PUBLIC HEALTH TRAINING FOR PUBLIC HEALTH OFFICERS

The following report was submitted and accepted:

Future public health advancement depends upon two things: First, an educated, informed public opinion; and second, an efficient, competent personnel in charge of public health activities.

In view of the foregoing recognized facts, your Committee has taken the liberty to enlarge the scope of its recommendations to include a request to the heads of all institutions awarding diplomas in North Carolina, whether State institutions, denominational institutions, or otherwise, especially to people who expect to assume the profession of teaching, that they inaugurate at the earliest possible opportunity a Department of Public Health and Preventive Medicine in the broad acceptation of that term.

For schools and colleges establishing such courses, headed by competent doctors of medicine as full professors, providing for non-medical students a minimum course of forty-two hours, lectures, and laboratory work, preferably given in the senior year and made mandatory on every person expecting to teach, is recommended. For the medical schools of the State, your Committee urgently recommends a Chair of Public Health and Preventive Medicine in addition to the regular prescribed courses now required of medical students. Such courses should require the Professor of Preventive Medicine to closely correlate his course with the work of the other departments of the Medical School. For example, there should be an interchange of lectures between the Professor of Bacteriology and the Professor of Preventive Medicine. The Professor of Preventive Medicine should give a series of lectures to the classes in Bacteriology on general public health administration, the principles and methods of individual communicable disease control, a separate lecture to each important disease, and so on. The Professor of Bacteriology should lecture to the class in Preventive Medicine on water and milk as a part of the practical work later to be expected of such graduates, this course to be illustrated with laboratory exercises. These courses preferably should be given in the junior or senior medical years, but for medical schools giving only the first two years course it is important that they be given in the second year rather than for the student to miss it altogether.

Your Committee further recommends that the heads of all health departments, city, county, or State, be manned by competent medical graduates.

Your Committee also recommends a short period of intensive training for every prospective health officer concerning the administrative duties of his work. This training to be taken under the direction of a competent county health officer, with actual work in the field, to be followed by observation of the work of the different bureaus of the State Board of Health and the State Laboratory of Hygiene.

It is further recommended that a copy of this report be mailed by the Secretary of the State Medical Society to the heads of all graduate institutions in North Carolina.

(Signed)

C. M. Cooper, M.D., *Chairman*
S. E. Buchanan, M.D.
R. S. McGeachy, M.D.

REPORT OF COMMITTEE ON PUBLIC POLICY AND LEGISLATION

Dr. John B. Wright, Chairman, presented the following report, which was accepted:

This year being the year in which the General Assembly met we beg to make the following report:

We kept in close contact with all Legislation affecting the profession. With the aid of the Board of Medical Examiners, we were enabled to kill before the Senate Committee a bill to allow an appeal over the heads of the examiners in restoring a license which they had repealed.

We also were successful in defeating, on the floor of the House, the Naturo-opathy bill, after a very close vote before the Health Committee of the House. This bill is one of the most far reaching and dangerous bills ever presented before our General Assembly. The fight was very spirited. We won by a 91 to 16 vote.

We were also successful in defeating before the House Committee, with the aid of Drs. Royster and Shore, a bill to compensate Dr. Estep sixty-four thousand dollars because of his failure to secure a diploma from the North Carolina Medical College and license from the Board of Medical Examiners.

The Parker Bill to increase the membership of the Board of Health was introduced and passed the House, and after conference with officials and members of the Board and Society was withdrawn from the Senate by Dr. Parker.

There were two bills we advocated and they were both passed. They were requested by the Executive Committee of the Board of Health. They were the modified Privy bill and the bill allowing the Board of Health to fix the salary of its Secretary. The Privy bill was passed. The salary bill was amended by fixing the Secretary's salary at not more than eight thousand dollars per year.

We were successful in all requests from the General Assembly.

Jno. B. Wright, M.D.
A. A. Kent
K. P. B. Bonner

On motion of Dr. Cyrus Thompson, duly seconded, the report was adopted. Dr. B. J. Lawrence moved that the House of Delegates extend a vote of thanks to Dr. Wright and the other members of the committee for their untiring efforts in behalf of the profession during the session of the last General Assembly. Motion carried.

REPORT OF COUNCIL

The following report of the Council was submitted and was referred to the Committee on Proposed Amendment of By-Laws:

At a meeting of the Council of the Medical Society of the State of North Carolina held in Durham on April 19, 1927, the following motion was made by Dr. F. R. Taylor, a member of the Council, and seconded by Dr. G. G. Dixon, also a member of the Council:

That the now existing committee on revision of the by-laws of the State Society be requested to define in detail the exact limits of the

Council's jurisdiction over members of the State Society, physicians who are not members, and over component county societies; and that in the event the Council's decisions are held to be supreme and not subject to appeal in any matters a penalty or penalties shall be fixed for disregarding such supreme decisions of the Council, such penalties to be enforced by the President of the State Society.

This motion was carried without opposition.

Respectfully submitted,

A. T. Pritchard, *Secretary of Council.*

April 19, 1927.

APPOINTMENT OF COMMITTEE

The Secretary announced the appointment by the President of a committee to study the standardization of specialties, as follows: Drs. C. S. Lawrence, W. M. Coppridge, W. S. Rankin. (In accordance with the report of the committee on the president's address, Dr. John Q. Myers is the fourth member of this committee.)

The House of Delegates then adjourned *sine die.*

SCIENTIFIC PAPERS

SECTION ON SURGERY.

SECTION ON PRACTICE OF MEDICINE.

SECTION OF MEDICAL VETERANS OF THE WORLD WAR AND MEDICAL OFFICERS' RESERVE CORPS.

SECTION ON PUBLIC HEALTH AND EDUCATION.

SECTION ON PEDIATRICS.

SECTION ON EYE, EAR, NOSE, AND THROAT.

SECTION ON CHEMISTRY, MATERIA MEDICA, AND THERAPEUTICS.

SECTION ON GYNECOLOGY AND OBSTETRICS.

JOINT SECTION ON PEDIATRICS AND THE SECTION EYE, EAR, NOSE, AND THROAT.

SECTION ON SURGERY

CHAIRMAN: DR. A. DET. VALK, Winston-Salem.

WEDNESDAY MORNING, APRIL 20, 1927

The meeting was called to order by the Chairman, Dr. A. deT. Valk, of Winston-Salem, at 9:30 A. M.

THYROIDITIS

ADDISON G. BRENIZER, M.D., Charlotte.

I am not to discuss so-called toxic thyroiditis, nor suggest more than the possibility of such an entity accompanying the syndrome of Graves' disease. The pathological picture of the thyroid in a certain percentage of goitre cases is not dissimilar except in degree to that following the actual invasion of the thyroid by bacteria, with the accompanying inflammatory and hypertrophic and hyperplastic changes. Although no bacterial invasion can be demonstrated in the overwhelming majority of hyperplastic thyroids, the general theory of etiology through bacteria or their products is most interesting in considering a disease where the causes are almost entirely unknown. Many of these cases may be merely an expression of lymphatism.

Last February, 1926, Watkins, in a very scholarly paper, emphasizes the fact that the thyroiditis referred to in the older literature and assigned an importance in the various pathological states of the gland, such as exophthalmic goitre, come about through the assumption that the localized collections of lymphocytes with or without the development of germ centres, were evidences of inflammation, whereas, at the present time, these findings are looked upon merely as a part of thymico-lymphatic constitution, which these cases all show to a more or less degree.

Up to July, 1924, according to St. George, reporting three cases under the heading chronic productive thyroiditis (Riedel's iron-hard struma), the condition is referred to in only one English text book.

It has been noted by many clinicians and pathologists that cases of acute thyroiditis are rare, as compared with acute inflammatory processes of any other glandular tissue. Hagenbuch found but forty-three cases among 45,953 medical and surgical admissions to the Basle Clinic during a ten year period. At the Mayo clinic forty-eight cases of Riedel's thyroiditis were found among 10,500 thyroidectomies and Crile observed thirteen well defined examples of this same condition. In a recent series at the Lahey Clinic, Boston, there has been but one case of frank suppurative pyogenic thyroiditis, one of tubercular thyroiditis and five cases of Riedel's thyroiditis.

In my series of 2400 clinical cases and nearly 1900 operative cases there have been two cases of acute non-specific thyroiditis one with abscess formation, three cases of Riedel's ligneous thyroiditis, two cases of tuberculous thyroiditis and two cases of syphilitic thyroiditis. Making of

all cases of thyroiditis, about one-fourth per cent of all clinical cases and about one-half per cent of all operative cases.

Four of the above nine cases, in my series, were accompanied by definite symptoms of hyperthyroidism. I shall not emphasize the hyperthyroid phase of the inflammatory thyroids, since I have just developed this subject in a paper delivered before the Southern Surgical Association and published in the March issue of the Annals of Surgery.

In a personal communication by letter with Harry G. Sloan, of the Crile Clinic, he writes me in part as follows:

"We have learned to associate an infection in the pharynx, which we have found invariably to precede acute thyroiditis, and invariably find, when the thyroid is involved in an acute inflammation, that the patient gets a thyroid intoxication quite similar to that seen in Graves' disease.

"This acute thyroiditis not infrequently goes on to suppuration and within the last four years, I have had two typhoid abscesses from which we have removed the organism; as well as four pyogenic ones where staphylococcus was found. The condition may subside with abscess formation, and then again we see the more chronic type, merging into woody or ligneous thyroiditis, where the gland is as hard as cartilage and on exposure looks like cartilage—this may involve only one area of the gland or the entire gland. We do not ordinarily operate on ligneous thyroiditis if we can disprove its malignancy, with which it is so nearly confounded. The microscopic sections of it look as though every cell had been destroyed, yet we invariably find they make a full recovery, if let alone, without developing any signs of subsequent myxoedema."

Pemberton of the Mayo Clinic, writes me, October 25, 1926:

"Inflammatory processes in the thyroid occur as the result of tuberculous and also non-tuberculous infections. In all the tuberculous which have come to operation, I have never seen more than seven or eight associated with hyperthyroidism; some of these were definitely associated with exophthalmic goitre. In the non-tuberculous variety there is often a history of preceding infection, usually in the tonsils, followed by pain and swelling in the region of the thyroid gland, although it is not uncommon to find painless swelling in any of these cases, without any preceding history of infection.

"In most instances we see thyroiditis in the chronic state, showing at operation the woody type of inflammatory reaction; at the time of examination this is usually unassociated with hyperthyroidism. In many cases of thyroiditis of the acute or subacute variety there is a definite increase in the basal metabolic rate, and many of these have been diagnosed exophthalmic goitre. My impression is that in a very high percentage of instances they go on to the development of myxoedema, presumably whether or not they are operated upon.

"In the above discussion, I have not included the cases of thyroiditis which are associated with exophthalmic goitre, for in about 10 per cent. of all these cases the histologic section of the slides shows a picture of round-cell infiltration and fibrosis in a degree, sufficient to diagnose thyroiditis. In most instances these are of a mild degree, but not infre-

quently it is marked, and in about one-half of one per cent of the cases it is very marked. These patients invariably develop myxoedema.

"At this time we have under observation one of our own nurses who, following a throat infection developed painful swelling in the neck. Her metabolism went up as high as plus twenty. Since then (two months) the swelling has entirely subsided and her metabolism is normal. Subsidence of the inflammatory process in the gland and of the febrile reaction came about very rapidly following tonsillectomy."

Various investigators, notably Roger and Garnier, Shimodaira and others have, as far back as 1900, injected various bacteria into the blood stream and recovered them, respectively, in the thyroid gland. Tomellini, in 1905, drew the following conclusions, quoted by Mosimon:

(a) "The thyroid can become infected with experimental tuberculosis by direct injection of small masses of tubercle bacilli, just as other organs—the spleen, kidneys and testicles can become infected.

(b) "The susceptibility of the thyroid against tuberculous infection is less than in the other named organs.

(c) "The decreased susceptibility of the thyroid against tuberculous infection is probably united with the special functional activity of the gland."

The above quoted experiment would go to prove the possibility of a bacterial invasion of the thyroid, by way of the blood route. The reported cases, for example, case one and two of my series, strongly indicate direct bacterial invasion by contact and possibly by the lymphatic route. A fourth route of invasion of the thyroid is along a more or less patent thyro-glossal duct.

In the first place, the thyroid is well encapsulated by the fascial compartments of the neck and there is no direct communication with the pharynx except in rare persistence of thyro-glossal duct. In the second place the thyroid has a very unusual lymphatic system which enables the gland to be drained to a degree unequaled in any of the other parenchymatous organs. In the third place certain authors have ascribed a local bactericidal function to the thyroid secretion. For these three reasons, if not for others the invasion and infection of the thyroid gland should be difficult.

Thyroiditis may be grouped into:-

(a) Simple, (non-specific) thyroiditis: acute, subacute, or chronic.

(b) Ligneous or granulomatous thyroiditis of the Riedel type.

(c) Tuberculous thyroiditis and

(d) Syphilitic thyroiditis.

The reaction to inflammation in the thyroid is not different from that in other tissues except in as far as the cellular elements become hypertrophic and hyperplastic or they are destroyed to more or less degree. Due to the structure of the thyroid the leucocytic infiltration is diffuse within the anatomical lobule, invades the alveolar epithelium and may be found in the lumina of the acini. This diffuse inflammatory reaction may become enlarged and go on to abscess formation, involving a certain area

of the whole thyroid gland, or subside spontaneously leaving in its train scattered and grouped lymphocytes, fibrosis, etc.

When the inflammatory reaction is less intense, or when the aggressive organism is not virulent and the resistance mounts higher, there is a more gradual leucocytic infiltration and collection, a more gradual fibrosis, a granular residue from cell destruction. There may be more or less fibrosis replacement and the formation of giant cells as in tuberculosis or syphilis. The fibrosis replacement goes to its extreme in Riedel's thyroiditis, where the gland is as hard as cartilage and looks like cartilage. In exophthalmic goitre, cells of the lymphatic series, grouped in the follicles or scattered between the acini are a part of the pathological picture (lymphatism); in chronic thyroiditis with hyperplasia, an advanced infiltration associated with desquamation and fibrosis gives a picture sometimes so dominating as to obscure an accompanying hyperplasia.

The presence of these groups of lymphoid cells both in thyroiditis and in hyperplastic glands has given rise to the question as to whether Graves' disease were associated with any inflammatory lesion of the thyroid gland.

Acute thyroiditis is marked by fever, and pain in the neck. There may be difficulty in breathing and swallowing with a certain amount of hoarseness, finally, a tender mass over the thyroid region. The inflammation may subside in a week or ten days or go on to a subacute stage or end in abscess formation, definitely localized or involving the whole thyroid gland. Symptoms of Graves' disease may be associated usually with the acute or subacute stage. Acute simple thyroiditis usually subsides without recurrence, abscess formation should be watched for and the abscess carefully exposed and drained.

Chronic ligneous thyroiditis (Riedel's struma) is, according to the opinion of most observers a chronic inflammation of the thyroid of unknown etiology. It takes a slow course, usually presents a cartilage-like, ill-defined mass of the thyroid gland, gives difficulty in breathing and swallowing, and often voice changes, offers no increase in metabolic rate and usually ends in hypothyroidism whether operated on or not. It is often mistaken for carcinoma. The opinion of Ewing, the Lahey Clinic and the Crile Clinic is that a partial bilateral thyroidectomy is the best treatment.

Although about 40 cases of tuberculous thyroiditis have been reported, the diagnosis has rarely been made before operation. The diagnosis of exophthalmic goitre or multiple adenomata has usually been made by the clinician and the true pathology only disclosed on section. One of my cases was clinically exophthalmic goitre; the removed portion was finely granular, very vascular and friable and uniform on the cut surface. The microscopic report was that, throughout, the gland was infiltrated with lymphocytes, minute tubercules and giant cells were found throughout the interstitial tissue. The follicles were infolded and lined by proliferating columnar epithelium. In my second case without Graves' disease, there were larger conglomerate tubercules with caseation and considerable fibrosis replacement. Partial thyroidectomy has been the usual treatment.

Most cases of thyroiditis syphilitica have been diagnosed from the fact that the struma accompanied history and symptoms of syphilis and

subsided under appropriate treatment. Actual gummata have been found in the thyroid gland.

A bacterial cause has been proven only in suppurative lesions and in such chronic processes as tuberculosis and syphilis. With the exception of woody or ligneous thyroiditis, milder inflammatory processes and even the cases of tuberculosis have not been demonstrated prior to pathological examination. In woody thyroiditis, bacterial cultures have not been recovered from the gland. The streptococcus and staphylococcus in Bohan's case of ligneous thyroiditis were cultivated from the teeth roots.

CASE REPORTS

Case 1. Man fifty-two, in good health up to time he developed influenza with bronchitis and cough for a week Cough more irritating and mass appearing over front of neck below thyroid cartilage, moving up and down on swallowing, which was done with difficulty. The mass became larger, more sensitive and presented in the shape of the two lobes and isthmus of the thyroid gland. At this stage the patient became nervous and tremulous, very weak, fast heart beat over a period of several days. During this time the whole mass gradually softened, fever continued but patient was much relieved of tachycardia, tremor and weakness. Incision of mass was advised and refused because he felt much better. Mass finally ruptured into trachea and abundant pus was coughed up, leaving the region of the neck almost flat. The patient was sluggish and inert for several weeks but finally reached his equilibrium, gained considerable weight and felt perfectly well again. This case was observed in 1912.

(In 1921, Gilman reported a similar case in which liquefaction involved the entire gland, including the isthmus, leaving only a shell of gland tissue within the capsule.) Figures 1 and 2 show the man photographed before and after rupture of the abscess into the trachea. A case was reported by Finney, one by Lahey and my case.

Case 2. An unmarried woman, twenty-eight years old, previously in splendid health, except for occasional attacks of tonsilitis, was taken with a severe infection of tonsils and throat; the lymph glands, particularly on the left side of the neck, were enlarged, massed and very tender. Then appeared an enlargement over the lower front of neck. Almost overnight her eyes began to protrude markedly, her pulse became very rapid. The eyes protruded almost beyond the lids. She became too weak and nervous to rise out of bed. Her fever gradually subsided, her throat recovered, her tonsils were removed and finally and rapidly both lymph gland masses and the swelling over front of neck subsided, the eye balls retired in their protrusion and the much lengthened and thickened lids dropped in ptosis over them. Evidently the cervical sympathetic had been injured. The patient went rapidly into myxoedema and was only recovered by the use of thyroid extract for several months. A plastic operation was done for the partial support of her eye lids. Figure 3 is a very poor photograph of her two months later.

Case 3. A married woman aged fifty, noticed the presence of goitre for two years, which had gradually increased in size. During the course of the last year her pulse has been very rapid, her eyes have become very prominent, loss of thirty or more pounds in weight, very nervous. The patient appeared as a thin woman, marked exophthalmus, general enlargement of thyroid gland some-

what hard, elastic and finely modular on the surface. Afternoon temperature, 98; pulse, 120; respiration, 20 and blood pressure, 160/70. Marked tremblement and tremor of fingers, metabolism plus 46. After a short course of Lugol's and pulse of 90 all gland was removed under novocaine except a small portion of both upper poles, which appeared to be fairly normal gland. The removed portion was finely granular, very vascular and friable and uniform on the cut surface. The microscopic report was that, throughout, the gland was infiltrated with lymphocytes, minute tubercules and giant cells were found throughout the interstitial tissue. The follicles were infolded and lined by proliferating columnar epithelium.

Diagnosis—Tuberculosis of Thyroid with Hyperplasia—Exophthalmic Goitre. The improvement in this case has been as revolutionary as any case of exophthalmic goitre. The healing was uneventful except for little discharge of pinkish serum. There has been return of pulse rate to 80, gain of weight, etc., July 15, metabolism was plus 46. December 11, metabolism was plus 24, temperature 98-6, gain of 32 pounds in weight. Figure 4 is a photograph of patient at present time.

Case 4. An unmarried girl, twenty-three years old, who developed a chancre on the gum after dental work, followed by mucous patches, secondary rash, palpable lymph glands, etc. About three months later was sent in with typical case of exophthalmic goitre. Symptoms of Graves' disease subsided rapidly under antiluetic treatment. tremor, swelling of thyroid disappeared and patient reached stage of good health and stability. She has remained well for eleven years. No metabolic rates were taken in those days.

Case 5. A widow, fifty-three years old. Osteomyelitis of the skull and left tibia. Typical exophthalmic goitre; positive Wassermann. Under antiluetic treatment symptoms of Graves' disease subsided rapidly. She was likely hyperthyroid for several months.

Sequestra were removed from skull and tibia. Wounds healed and patient remains quite well for fourteen years.

Also one case of tuberculous thyroid and three cases of ligneous thyroiditis without hyperthyroidism. These cases make up about 1/4 per cent of my operative material and about 1/8 per cent of my observed clinical cases.

CONCLUSIONS

(a) Thyroiditis is rare, probably ¼ to ½ per cent. of all operative material and ¼ to ⅛ per cent. of all observed clinical cases.

(b) The two most frequent proven types of inflammation are tuberculous and woody thyroiditis. Syphilitic thyroiditis certainly occurs. Non-specific thyroiditis has shown its bacterial cause in suppurating cases.

(c) Hyperthyroidism may accompany any type of thyroiditis at any stage; usually the subacute stage. The relation in tuberculous thyroiditis is striking.

(d) Most cases of non-specific and woody thyroiditis finally become hypo-thyroid whether operated on or not. (Difference of opinion as to this point at the Crile and Mayo Clinics.)

(e) Case of tuberculous thyroiditis operated on have given the best functional lasting results. Syphilitic thyroiditis has been relieved with appropriate treatment.

(f) Therefore the more slowly progressive and destructive type of inflammation is more apt to be accompanied pathologically by hyperplasia and signs of hyperthyroidism and is more apt to give better functional results after operation.

(g) The usual amount of thyroid should likely not be removed, even in tuberculous thyroiditis, for at least one case out of thirteen has resulted in myxoedema.

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DISCUSSION

Dr. W. H. Sprunt, Jr., Winston-Salem: I am very interested in these conditions. I have seen two recently, one a simple thyroiditis following an acute tonsillitis. It was interesting that it was in a girl of about eighteen and during the acute stage her metabolism was up to about plus 25, and as the thyroiditis subsided the metabolism subsided with it, coming down to about minus 20, the girl took on a great deal of weight and showed signs of marked hypothyroidism. She stayed in that condition for some months and eventually came within normal limits.

I have one colored woman under observation now with a thyroiditis apparently becoming more and more hypothyroid. She has never had any acute infection that we could trace it to and we never found any etiology to account for it.

Dr. A. G. Brenizer, Charlotte: I think the point in distinguishing thyroiditis from exophthalmic goiter, with the possibility that some of those exophthalmic goiter glands are mildly inflammatory, was brought out recently in the case of a nurse that we had. She had rather bad tonsils and came in with a large thyroid gland. She was running a little temperature, only 99.6, with a 9000 leucocyte count. The treatment there was to let the patient rest, which she did for six weeks, and then take out the tonsils with the hope that the hyperthyroidism would subside. The operation of tonsillectomy would be about as hard for her as the thyroid-

ectomy. The final thing to do was to take out the thyroid gland which showed no more inflammatory change than the ordinary case of exophthalmic goiter. The temperature disappeared, the pulse came down after five days and she went through the operation without any reaction. Finally, in the course of a week or ten days, the pulse went down to 80 and she immediately improved.

As to tuberculous thyroiditis, they have not been diagnosed before. Most of them that come in are diagnosed exophthalmic goiter and the exophthalmic goiter is very frequently associated with tuberculous thyroiditis. There were nine cases out of thirteen in this series, and six out of the seven that Judd and Broder reported from the Mayo Clinic.

You have two things to deal with, whether a mild inflammatory process starting up the hypertrophy with leucocytic infiltration, or whether you get that hypertrophic and hyperplastic gland with leucocytic infiltration in every case with destruction of cells or a fibrosis replacing the destruction. There the points are going to be very fine. I think everybody in removing thyroid glands thinks that the gland must be inflammatory in spite of the section and how it looks. Some of those cases improve and some become infected. However, you do feel that there is probably an inflammatory reaction mixed up with it. In the case I described the differentiation is very fine. Of course, in the one case there was no doubt about the inflammatory reaction. As to the woman with syphilis, it cleared up under antisyphilitic treatment, but did the woman have exophthalmic goiter and syphilis too, and how was she benefited by the antisyphilitic treatment? I had several men say to me, "you know salvarsan acts very freely in cases of thyroidism even without syphilis." There is a fine distinction and I think we should be alert as to whether it is inflammatory or not. I think most of us would be inclined to let a gland that was swollen alone and not hasten to take it out, but recently according to the report of Lahey in dealing with ligneous thyroiditis, he took out a section for diagnosis and the patient did not do very well; in others he did a thyroidectomy and the patient improved. The gland is hard and presses down on the trachea so that liberation of the gland relieves the symptoms of pressure and these patients seem to do a little bit better, although they are prone to reach the state of hyperthyroidism.

Dr. Foy Roberson, Durham: My experience with hyperthyroiditis has been practically nil. As he shows in his paper, it is rather hard for a person who has not seen a great many of these cases to tell whether one is dealing with a real exophthalmic goiter or hyperthyroiditis. During the influenza epidemic we saw abscesses in almost every part of the body. I think though that most of the men who have observed these cases agree that they are very frequently cases of myxoedema and probably these cases are more often the type of goiter that is operated upon than any other.

There is one thing that I don't believe Dr. Brenizer emphasized in his paper and that is that cases of hyperthyroiditis do have a high temperature at times. You may see a person with a temperature of 103-4, increased pulse rate and swollen thyroid gland and an increase of the metabolic rate. I remember one case we had which was not operated upon but the patient had a temperature of 103-4 for about a week, very fast

pulse, the thyroid gland was swollen, and he went on to recovery without any interference whatever and never developed myxoedema.

GALL BLADDER DISEASE

Dr. W. L. Grimes

Years ago disease of the gall bladder was limited to stone formation. If stones were found at operation they were removed and the gall bladder was drained. If stones were not found the gall bladder was not drained and the patient continued to have symptoms. At a subsequent operation a few years later stones were found. This led to a discussion of infection of the gall bladder being also a cause for the symptoms, so cholecystotomy was done in patients whose gall bladders were thickened and adherent but did not contain stones. As a result more patients were cured. However an appreciable percentage of patients, after a period of good health, returned with symptoms similar to ones before operation. At a second operation stones were found. It was concluded therefore that the gall bladder was not such a necessary organ and that its removal would result in the cure of a larger number of patients, so cholecystectomy was instituted for patients with gall bladders that were thickened and adherent and contained stones, cholecystotomy being done where the disease was present but to a less degree. Very satisfactory results were obtained where cholecystectomy was done, but an appreciable percentage of patients who had cholecystotomies would later on develop trouble again. Consequently cholecystectomy was also done for the latter group of patients with the result that more were cured. Nowadays we even go further—taking out gall bladders in which the disease is very mild. Judd writes that: from a study of four hundred patients, if there is a typical history of gall bladder disease with colicky pain, the patient would be relieved of his symptoms if the gall bladder were removed whether or not it showed gross changes; but, on the other hand, if the symptoms were of the dyspeptic type, or principally soreness, tenderness or aching, the likelihood of cholecystectomy bringing about a cure was not great.

The manner in which the gall bladder becomes infected is very interesting and seems now to be pretty well established. It was formerly thought that bacteria, causing cholecystitis, entered the gall bladder by way of the ducts, either by ascending the common duct or by being carried to the liver, excreted into the bile, and then passing into the gall bladder. Cushing showed in 1899 that it is practically impossible to infect the mucous membrane of a normal gall bladder, at least in a dog, by the simple introduction of bacteria. The requisites for the production of cholecystitis were: injury to the mucosa, ligation of the cystic duct preventing emptying, or interference with the blood supply. This finding has been confirmed by many others. Graham, in 1918, published an article indicating that, in man, hepatitis is a constant accompaniment of cholecystitis. The constancy of this finding has been confirmed by many others. In 1922 Graham and Peterman published an article giving evidence that, in the majority of patients with cholecystitis, the disease is an extension from an inflammation in the liver through the lymphatics.

As the richest supply of lymphatics in the gall bladder is subserous they found that in the early stages of cholecystitis the majority of gall bladders showed most of the inflammation to be subserous, and least in the mucous membrane. Other experiments showed that hepatitis would follow experimentally produced cholecystitis giving the suggestion that each may reinfect the other. They do not take the stand that all infections of the gall bladder occur in this way but feel that some are doubtless of haematogenous origin as proposed by Rosenow and a few are due to an involvement of the mucosa first.

The diagnosis of gall bladder disease with typical symptoms and signs presents very little difficulty but the early diseased gall bladder does present difficulty and many of them will be missed unless other diagnostic aids are used. Lyons' method seemed to promise something but unfortunately it is of little help. There is no doubt however but that non-surgical drainage of the gall bladder does give temporary relief to a small number of patients. Up to the present time the most valuable aid in diagnosis is cholecystography introduced by Graham and Cole. Beginning in 1923 they, with co-workers and others, have done considerable work in cholecystography. Graham, in a very interesting article, reviews this work. Reports from different ones indicate that the method yields at least 90% correct diagnoses, and no doubt the percentage will increase as our experience increases. The consensus of opinion now seems to be that the intravenous method is the more accurate. However many workers have found the oral administration, in protecting capsules, quite satisfactory. Still others combine the two methods using the intravenous method as a check or where the oral method did not give satisfactory results. Sproul, in a recent article, reports a few observations on patients to whom he has given the drug mixed in cream of wheat. His results were more satisfactory to him in every way than when the drug was given in the enteric coated capsules. This may prove to be the most satisfactory method of administration. Roentgenograms are made at the fourth, eighth, twenty-fourth, and thirty-second hour after injection and at the twelfth, twenty-fourth, and thirty-second hour after oral administration. Others make the roentgenograms at the end of the twelfth to the fourteenth hour and have the patient eat a meal composed principally of fats returning at the end of two hours and later if necessary.

The chief points in making a diagnosis of gall bladder disease are: 1—failure to obtain a shadow; 2—filling defects, indicating stones occupying the space which would otherwise be filled by the opaque substance; 3—irregularities in outline, indicating adhesions, etc.; 4—variations from the normal in density of shadow, in time of appearance and disappearance of the shadow. The last point presents the greatest difficulty in interpretation and constitutes most of the failures in diagnosis. I know of no other method which gives such a large percentage of correct diagnoses. It helps us not only in establishing a diagnosis of gall bladder disease but also in definitely ruling out the disease and no doubt has saved a good many patients from operation for gall bladder disease.

After the diagnosis of gall bladder disease has been established the question of whether to remove or to drain the gall bladder must be determined at the time of operation. By far the larger percentage of

patients are subjected to cholecystectomy. The post-operative results would seem to indicate this to be the wiser course for only about two per cent of these patients have future trouble while after drainage from twelve to fifteen per cent have a return of symptoms.

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DISEASE OF THE GALL BLADDER AND TREATMENT

Foy Roberson, M.D., F.A.C.S., Durham.

The gall bladder has two known functions. One is concerned with the concentration of bile by the absorption of water. The bile in the gall bladder being ten times as concentrated as in the bile ducts. Another function of the gall bladder has to do with the regulation of pressure in the bile ducts, and possibly a third function of the gall bladder is the secretion of something essential to the liver. This function is suggested by the fact that the blood empties into the portal vein. Its principal dysfunction, seems to be cholecystitis, from which many pathological conditions develop.

While it is true that we know of possibly three real functions of the gall bladder, we are not sure how important these functions are to the organism as a whole. We do know, however, that patients who have had a diseased gall bladder removed get along quite as well as a person with a normal gall bladder, and far better than before the diseased organ was removed.

Cholecystitis might well be termed the initial lesion of biliary diseases, since the gall bladder is usually first to fall victim to disease and cholecystitis is an infection coming generally through the blood. It may be an ascending thing passing from the duodenum up through the common duct.

Anatomically the gall bladder is composed of three principal layers; the mucosa, the muscular layer and the serous covering, between these layers are lymphatic and connective tissue and blood vessels.

It is chiefly in the walls of the gall bladder that infection takes place. It may be in the mucosa or in the so-called "strawberry gall bladder," it may be in the serosa, which condition is known as pericholecystitis.

When the gall bladder becomes diseased it not only becomes a focus of infection, but it loses one of its principal functions, viz.: that of concentrating bile, and if the condition becomes marked it also fails in its function of regulating pressure within the bile ducts, so instead of having a normal functioning organ we have one that is not only diseased, but is functionless, and it immediately begins to be a trouble maker in that it upsets digestion, causes pain, and often begins to manufacture stones instead of concentrating bile. It may send a stone to lodge in the common

duct causing partial or complete obstruction, thereby setting up jaundice, hepatitis, pancreatitis, or even nephritis, and it is not unlikely that it is a factor in duodenitis that Judd speaks of.

The gall bladder lies on the under surface of the right lobe of the liver to which it is closely attached. It receives a few small blood vessels from the liver, but its chief blood supply is from the cystic artery. It is somewhat pear shaped, the fundus or large end being towards the liver margin and hanging in a dependent position, from the large end it narrows down to a small duct, the cystic duct with the hepatic ducts unite to form the common duct which empties into the duodenum at the sphincter of Oddi.

Normally the gall bladder is soft and velvety and of a bluish color. Its walls are thin and translucent. When it becomes diseased it is thicker and less pliable. It may change to a thick walled contracted gall bladder so often seen in common duct stone, or it may change to the pale distended hydropsed gall bladder when the cystic duct has become blocked by a stone and the bladder becomes filled with white bile and mucus, or it may even change to the very thick walled beefy looking affair when it becomes acutely inflamed and distended with pus; the condition known as empyema of the gall bladder. Gangrene and even malignant disease may develop, all of which possibly have their origin from the simple cholecystitis of mild degree. In its onset, cholecystitis is extremely insidious and the symptoms are easily overlooked by the patient and the physician until it becomes so far advanced that stones and other complications of cholecystitis develop and the diagnosis becomes more evident. However, it is important that cholecystitis be recognized early because at this time it is much easier to relieve the patient than later when the disease has involved the other ducts, the liver, pancreas, etc.

The early symptoms of gall bladder disease are chiefly those of dyspepsia, usually of a gaseous or bloating type. The patient's chief complaint is of much gas and bloating after eating.

There is usually tenderness in region of the gall bladder, but there is not apt to be much pain during the early stages of cholecystitis, unless stones have formed, though occasionally we see cases of typical biliary colic which does not reveal stones at operation. We are not referring, of course, to acute gall bladder conditions when all the symptoms are marked and diagnosis is usually quite simple. We are referring to the symptoms of early cholecystitis. In these cases there is often belching and food spitting. Examination of the gastric contents may show an hypo-acidity. The symptoms are often so mild and indefinite they are mistaken for chronic appendicitis, and while there is often associated with it chronic appendicitis, the gall bladder is possibly the chief offender. No doubt many of the cases of chronic appendicitis that are not entirely relieved of symptoms following operation are due to the fact that the patient still has a diseased gall bladder.

It is not desirable in a paper of this type to go fully into all the phases and complications of cholecystitis. We desire to emphasize the cholecystitis of the early stages. In making the diagnosis the dyetest of Graham has filled a long felt need. It is based on the theory of the

normal gall bladder concentrating bile so that the bladder shows up plainly and symmetrically 15 or 18 hours after the dye is taken in capsules by mouth. It shows up earlier when taken intravenously. A diseased gall bladder may not show up at all, or if it does show it is distorted and indistinct, the normal gall bladder being much better visualized. Sodium-tetra brom phenolphthalein or sodium iodo phenolphthalein may be used. The latter is more opaque to the X-ray and is no more toxic.

In the treatment of gall bladder disease cholecystectomy is the procedure of choice though it may not always be practicable. Cholecystotomy is a useful operation at times as is choledochtomy and cholecystogastrotomy, but usually cholecystectomy is ideal because it gets rid of the disease and the patient remains well when the operation is done before damaging complications develop.

Medical treatment is useful as a palliative measure when patients, who for some reason cannot be operated upon. Operations other than cholecystectomy do not cure the patient, but only relieve some of the distressing symptoms.

Of much importance is the condition of the patient when the operation is done. Always the patient should be in the best possible physical condition. Gall bladder surgery as a rule is a real major surgery. Acute cholecystitis should not generally be operated upon until the patient is over the immediate attack, or until conditions have returned to normal as nearly as possible. Patients should be tided over attacks of biliary colic with jaundice until the jaundice has cleared away unless it be in the case of a common duct stone, when delay is not usually desirable. Perforated and gangrenous cholecystitis, though rare, should be operated upon promptly when possible.

Gall bladder surgery is best done in one stage. In jaundice cases the coagulation time should be studied and blood matching done in order that transfusion may be resorted to when needed.

As to the actual operation good relaxation and good exposure of the parts are essential. Adhesions should be carefully dissected. In doing cholecystectomy the cystic duct should be isolated and clamped separately from the cystic artery when possible. The important point is to clamp the cystic artery before it retracts. This will do away with troublesome bleeding and possible injury to the hepatic or common ducts. Drainage of the common duct is often better than drainage of the gall bladder.

As to drainage after cholecystectomy many cases do well without drainage, but drainage with rubber tissue or cigarette drainage is always safe.

DISCUSSION

Dr. C. S. Lawrence, Winston-Salem: My interest in gall-bladder surgery centers around the chronicity of so many patients that I have seen, patients that come in complaining of chronic indigestion over a period of years. Some of those cases are most difficult to handle. Take a case, for instance, that has had gaseous indigestion for twenty-five years with a slight tinge of yellow to the skin and sclera and leading a miserable existence all these years. A great many of them I find have difficulty

in swallowing at times. They regurgitate food and have a rather serious time, taking drugs over a long period of time. Of course, it is easy to operate and remove a gall-bladder that is adherent to the duodenum or the pyloric end of the stomach, showing that the adhesions are inflammatory in character, chronic, with scarring of the liver and slight enlargement of the head of the pancreas. A great many of these cases have cardiospasm. It is perfectly simple to operate but frequently they have the symptoms extending over a period of time after the operation. I have three or four cases of cardiospasm that have not been cured after the operation which was performed three or four years ago. They get better, have esophageal bougies passed now and then but some of them never get entirely well. I think that is due to the fact that there is so much destruction of the muscular tissue and the nerve tissue. Therefore, we should have these cases treated before permanent damage is done to the vital organs.

In discussing this matter a few days ago anatomically with Dr. Mangum—the doctor and I were expert witnesses in a chiropractic trial and during the intermission we discussed things pro and con—he advanced the idea that the cardiospasm may be due to injury to the pneumo-gastric nerve, chronic toxemia or inflammation, and it takes as you know a long time for the nerve to regenerate. After a period of years maybe the pneumo-gastric nerve will come back and pick up the tone of the muscle and give relief. The point I would like to bring out is that we should get these cases early. A man should not suffer with indigestion for twenty years. If we get them early we can cure them I think. The youngest patient I have had was a boy nine years old, we did empyema of gall bladder cholecystotomy and he made a good recovery and has had no trouble since. The youngest patient with stones was fourteen years old, the oldest about eighty. Gallstones have been found in stillborn infants, so we have gall bladder disease even in utero, and we should look out for it and try to relieve these patients before they have permanent destruction of some of the vital parts.

Dr. A. G. Brenizer, Charlotte: There is nothing much to add except to touch on the cholecystograph part of it. Allison of Minneapolis was recently visiting me and he said that they had finally arrived at the giving of the dye by mouth which he thought gave just as good a shadow of the gall-bladder as if done intravenously. Sossman of Boston does not think so. It seems to me from all indications to give a very good index of the physiology of the gall bladder. Heretofore we have been running a little bit at random and we don't know whether some of the gall bladders should have been removed or not. It seems to me curious that we should find a case like this, a woman with a big gall-bladder and when you operate you find a thick wall with hundreds of stones and no cystic duct at all; it has been destroyed. Of course, that has been going on for years. Then again we strike a little, contracted gall-bladder with one or two stones and the patient has had a series of disturbances and is relieved often by removing the stones. With a cholecystograph we will get not only a correct anatomy, but a good idea of the function of the gall-bladder. As you pass the magnesium sulphate down it empties out rather rapidly after a glass of cream and, of course, it is interpreted on

the A, B, and C plan. I think it comes from the hepatic or cystic ducts as well as from the gall-bladder.

I believe we are going a good ways when we have the routine technic of cholecystography established and when we get an idea of the function of the gall-bladder before we operate instead of operating without knowing whether it is a strawberry gall-bladder or whether it is involved or not. Unfortunately though they do not all clear up right away and you feel that you have failed where there has been a pretty obvious involvement of the gall-bladder. Where the inflammatory process has been going on for a long time there are usually some signs of obstruction, but now with the use of the dye we will be more carefully guided. We can look back on surgery when we did not have a lot of things that we have now to guide us. Think of operating on the thyroid without the more refined methods we now have. We are very lucky to be passing through this period.

T. C. Bost, Charlotte: I want to emphasize one point and that is, regardless of the treatment of the case, they should never be considered an emergency. No gall-bladder should be considered an emergency operation unless perchance it is just a simple stone and is done to relieve the pain. Certainly in the acute inflammatory cases, which will be determined by symptoms of inflammation, you do not get a high leucocytosis in many badly infected gall-bladders as you would from an appendix or some other condition in the abdomen where there is such a rich supply of lymphatics. You do not have ordinarily the high leucocytic reaction that you have in other parts of the abdomen, so I think it should not be considered an emergency. It is true that occasionally one of these cases may rupture, but it is very unusual and the mortality that we might have in rushing in to an acute case would certainly offset this occasional case that might rupture and that might have been saved by early operation.

Another point that the doctor did not bring out is in regard to a case that is markedly jaundiced. There again even if you have a simple stone formation with marked jaundice it is mighty poor surgery to rush in because it has been found that in many of these cases with marked jaundice that after the operation—perchance at autopsy—the abdomen is found full of blood due to the prolonged period of blood clot. This can be very materially shortened by lessening the blood clotting time. So you have time to get the patient in condition for operation, lowering the blood clotting time and waiting for acute symptoms to subside and doing the operation at a more opportune time.

Dr. B. F. Royal, Morehead City: I should like to ask the essayist to answer one question. When you go into the upper abdomen for these gall-bladders you naturally expect to remove the gall-bladder. When the gall-bladder is exposed and the head of the pancreas is much harder than normal, is that an indication for the removal of the gall-bladder or for drainage?

Dr. A. G. Brenizer, Charlotte: As to a gall-bladder not being an emergency operation I am not so sure of that at all. Lately we have had two ruptured gall-bladders. One of them we pressed on and it ruptured.

and more recently than that we had a slow perforation of the gall-bladder. That is one of the cases I referred to. There was enormous dilatation of the gall-bladder and it was very thin at the apex. We have had few deaths from gall-bladder surgery because we have operated early, particularly if they were not markedly jaundiced. I think there is a good deal of danger of the gall-bladder rupturing, and if they are not jaundiced I don't see why they should not be operated on immediately just as we would treat an acute appendix.

Dr. C. S. Norburn, Asheville: In the discussion of the symptoms of this disease I think one or two things might possibly be added. The essayist said that these troubles come on immediately after eating. As the usual thing they do come on immediately or within thirty minutes after eating.

Another point that was not brought out I believe is that certain types of food cause trouble. When a patient comes in and says that he can eat certain things and cannot eat certain other things the chances are that he has a gall-bladder condition. That doesn't always hold true, of course, but that is a means of differentiating this condition from stomach ulcer where all foods tend to relieve the pain.

Another point I want to speak about is one that I do not understand myself, but many patients come in and state that they have gall-bladder disturbance after a nervous shock exactly as they do after an indiscretion of diet. Quite recently I have had two cases that went on to empyema of the gall-bladder, with large stones, and each of the women told me that following any nervous excitement such as a near automobile accident they would have a typical gall-bladder attack with vomiting and the usual trouble associated with indiscretions of diet.

Another thing I would like to ask the essayist is why women have gall-bladder trouble so often and men complain of it so seldom? We have gotten so that we associate gall-bladder trouble and appendicitis with women, and ulcers and appendicitis with men. I don't understand exactly why that should be.

In reference to whether a gall-bladder should be taken out immediately or whether operation should be postponed, I think that if possible we should postpone it because we should do the whole thing at one time if we can. If we go into an acute gall-bladder and take it out, we put the patient, of course, in very great danger and if we go in to drain the gall-bladder the chances are that within 3 months we will have to go back and take it out. Therefore, I think they should be given a reasonable length of time to see if the condition will clear up—a few days. If not cleared up within a few days, I think it should be explained that we will drain the pus and operate later. I have seen several cases where the wall of the gall-bladder was quite thin and I think if I had postponed the operation a few more days the gall-bladder would have ruptured.

Dr. N. D. Bitting, Durham: Dr. Lawrence brought out a point that has been very much in my mind for sometime, that so many pathological changes we find taking place in the adjacent structures around the gall-bladder are constantly found which, of course, works to the detriment of the patient. Whenever we find that we can diagnose a lesion in the gall-

bladder, then let us attack it as soon as we can when the patient's condition will warrant surgical interference because that will minimize the pathological changes in the gall-bladder. I have seen some ulcers lately that I am sure were probably due to a diseased gall-bladder.

There is a type of case that probably doesn't show much local tenderness or involvement but there is another type that does show considerable inflammatory reaction which is manifested by a leucocytosis and symptoms of rigidity, extreme pain and nausea. That type of case should be attacked immediately provided the patient's condition will stand the risk. The mild cases can be postponed. Nature is very good to us and does wonders in the abdomen, but in time nature has to draw on its reserve in other organs and they suffer some damage. Therefore, I believe it is better to attack the gall-bladder early as we do the appendix if possible, for if there is a diseased focus anywhere in the body it is sure to do harm.

Dr. J. B. Bullitt, Chapel Hill: I am not a surgeon and know very little about surgery. My reason for coming in this morning was because I hoped to hear more discussion on the pathological side of these conditions. There has been very little said about it. We all know that practically all surgery is an attempt to relieve some organic pathology and as surgeons you must all think in terms of pathology. I have been rather surprised that there has not been more discussion along that line in connection with gall-bladder conditions. Dr. Brenizer referred to the lack of correspondence of symptoms with the different types of pathology. I have two specimens to illustrate what he speaks of. In one, a man thirty-five or forty years of age, the symptoms had been practically nil until some acute attack which resulted in operation. The patient was in good health until a short time before the operation. The gall-bladder is 6½ inches long, nearly 3 inches wide, the walls a little over ½ inch thick. I counted twenty-six good sized stones and there were innumerable small ones. Yet that man had been carrying a bad gall-bladder for many years with apparently no symptoms until finally an acute attack resulted in the necessity for the operation.

The other specimen looks in the gross, almost normal. It was removed from a woman—I think one of Dr. Lawrence's cases. Microscopically there was a small amount of inflammatory reaction throughout the wall, but nothing that would seem to justify severe symptoms, yet she had had serious trouble for several years from this mildly inflamed gall-bladder.

The question is asked why men so seldom have this trouble while women so frequently have it, and why the symptoms in men are so often less pronounced than in women, even with the same pathology. Draper's work on the physical make-up of mankind points to part of the answer to both questions. Certain anatomical types are especially prone to gall bladder inflammation; women, more frequently than men, belong to this type. There are also associated with these types certain differences in nervous sensitivity between men and women, and between different men, and between different women. Some react strongly with symptoms to a slight physical insult while others resist a great insult. But our understanding of these things is still vague and unsatisfactory.

Dr. B. C. Willis, Rocky Mount: As to operation on the acute gall-bladder I think that is an important question to be determined. I don't think we can be dogmatic about it at all. I think it is well to survey the general condition of the patient very carefully before advising immediate operation, but I do believe that there are a certain number of cases that require immediate operation. We have had gall-bladders to perforate. We had two cases of perforation with abscesses of the liver and I don't believe a delay is advisable in such cases. This is a question of surgical judgment giving due consideration to the condition of the patient. Of course, if the patient is moribund no operation is called for, but a certain number of cases demand immediate operation.

Dr. B. J. Lawrence, Raleigh: I want to lay emphasis on what Dr. Willis has just said and on the points spoken by Dr. Brenizer.

I will have to take issue with Dr. Bost's statement that an acute gall-bladder is never an emergency. Of course, the management of the gall-bladder, acute or chronic, is far from settled in my own mind and I think that is a justifiable position when you find the best surgeons with the greatest experience still diverging widely on so many points in regard to it. However, as we go along certain features are becoming more crystallized. I am frequently unable to tell which case I should operate upon at once and the ones in which an operation should be delayed. Dr. Willis says that is a question of surgical judgment and I think he is eternally right. Surgical judgment only comes by years of experience and therefore, those with most experience should be in the best position to determine this question. Of course, a great many gall-bladders are undoubtedly emergencies. I have had three perforations that I distinctly recall.

One other question I was very much interested in. Dr. Norburn seems to feel there are a larger number of gall-bladder conditions in women than in men. I wondered when he said that if some of that impression is not due to the fact that we operate on a good many more women than we do men. I suspect that if we should take a thousand men and a thousand women and operate on all of them we would find a much more equal number of gall-bladders than we now have the impression, we find. I believe this is partly due to the fact that we operate on more women than we do on men.

I wish the essayist in closing would tell us a little more about how to tell which cases we ought to delay operation on and which cases should be operated upon immediately. I am sure that if you see a desperate case and you fear it is empyema of the gall-bladder with or without stones, that in your judgment is likely to perforate, you would be justified in draining immediately notwithstanding the fact that these patients very frequently have to come back for another operation.

The statement was made that these patients usually come back in three months. That has not been my experience. I recall two cases, one a little woman, very stout; another, a well developed man past his sixties—both with large gall-bladders which I drained because of the severity of the symptoms—one 5 years and one 3 years ago, and both have been in perfect health since, and neither has had to have a second operation thus far. It is my experience that when they do come back

for another operation it is a longer period than three months, usually a period of from one to three or five years.

Dr. W. L. Grimes, Winston-Salem (closing): There are one or two things I want to speak about. First, the method of treatment. If for some reason or other the patient can not have an operation, she may be relieved by nonsurgical drainage. I have a patient at present, one of our nurses, who, we know, has a diseased gall-bladder according to the X-ray examination, but for various reasons she has not been able to give up the time to submit to an operation. If they will drain her gall-bladder once a week she will get along very well; if not, she has a terrible time of it.

To answer Dr. Royal's question. I do not think there is any doubt but that a diseased pancreas is a clear indication for drainage of the gall-bladder and there is no question but that we have emergency operations on gall bladders just as we have emergency appendices, but the emergency gall bladder is of very rare occurrence. In regard to drainage following cholecystectomy, I want to say that I am heartily in favor of it. Recently I had a patient that I did not drain. In about twenty-four hours her temperature reached 100.5 going to 101 the next day and to 102 the next day. I was afraid something had happened but watched her carefully and on the fourth day her temperature came to normal. The incision healed perfectly, but I would have rested much better during those three days had I put in a drain. Of course it was the ordinary post-operative reaction, rather severe.

Dr. Foy Roberson, Durham (closing): More is being written about gall-bladder disease than ever and I think a good deal of it is undoubtedly due to what has been done with cholecystography.

Dr. Bullitt brought out a most important thing, the pathology of gall-bladder disease. We must decide where the disease originally starts. My feeling is that it starts in the gall-bladder, that is that the gall-bladder is primarily attacked, and that hepatitis, pancreatitis, choleangitis, and nephritis are secondary to it. Now we know that the gall-bladder has but two known functions. One is the concentration of bile in the gall-bladder by the absorption of water, the other the control of pressure within the ducts. There you have an organ that doesn't have much function and you don't know how important those two functions are. Probably on account of its dependent position, with the concentrated bile in it, a good deal of the disease starting there is due to the circulation and lack of exercise, but if that proved to be true that biliary disease starts in the gall-bladder then we must make the diagnosis early, as Dr. Lawrence has brought out in cases of dyspepsia. My own opinion is that we are not seeing as many of those cases as we used to in older people. We see contracted gall-bladders and thickened ones and those containing stones, also thickened pancreas, but I don't believe in the next few decades we will see those cases as we have in the past because the diagnosis will be made early, the gall-bladder taken out and we will not see the severe complications.

There are two things to be considered in the treatment of these cases. First of all, comes your own experience and your own judgment, and the

other thing to consider is the experience of men who have done a tremendous lot of work along this line. I believe that the men all over the country who have written most on this subject have agreed that acute gall-bladders should not be operated upon. That must, of course, be modified by one's own surgical judgment. You cannot answer that with exact nicety. Transient jaundice should simply be watched. A gaseous condition should be allowed to subside. If there is jaundice with stone, there is nothing to be gained by waiting. As to whether to drain the gall-bladder or to take it out if there is pancreatitis, if the pancreatitis is secondary to the gall-bladder condition that can usually be shown. If you take out the diseased gall-bladder the pancreatitis and the other secondary infections will subside. However, if you feel that other conditions within the liver need drainage, then drainage of the common duct is better than drainage of the gall-bladder with thick walls, distended and full of pus. If the gall-bladder is contracted there is no use to take it out, for nature will destroy it. In many cases with a thickened pancreas and a thickened gall-bladder if you take out the gall-bladder the secondary conditions will subside.

TREATMENT OF PERFORATIVE APPENDICITIS WITH OR WITHOUT ABSCESS

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The ideal treatment of appendicitis should begin with the first symptoms but this is rarely possible as the laity has not been sufficiently educated by the profession. The diseased appendix is never perforated without warning symptoms. These may be slight or fulminating in character, lasting a few hours or several days. In one case in our series the operation was done three and a half hours after onset of pain in a healthy young man. Perforation had occurred and localized peritonitis was present. This is the extreme case. The appendix that is perforated within twelve hours causes such violent pain that the patient is usually forced to seek medical aid and it is often the golden opportunity of the physician to save life by moving him to a competent surgeon. There is a definite increase in mortality in fulminating cases, improperly treated, according to the length of time elapsing between appearance of symptoms and operation, just as in cases of intestinal obstruction, though not in the same ratio. Many patients with perforative appendicitis have previously had one or more mild attacks and their recovery emboldens them to disregard medical advice. These cases are apt to come to operation late and after purgation. There is another large group of patients who think their pain due to certain food and they proceed to purge themselves without consulting their physician. These people are usually quite ill as they take the purge very early, before the protecting adhesions are formed and the appendix has become immobilized. Of the twenty-three who died, sixteen had received from one to many purgatives. In seven it was not stated. In my opinion, there is no more potent cause for increased mortality than purging. It is greatly to their credit that the

medical profession is disregarding the earlier teaching of operation as a last resort, also that the dangerous and pernicious habit of purging these patients has fallen into disrepute.

There is little division of opinion between surgeons that acute cases of appendicitis should be operated upon in the first thirty-six hours, provided the patient is otherwise healthy, but after this period, the followers of the great Ochsner believe in tiding over a certain group of patients. Some of these develop an abscess, others improve, and a small percentage die. A large number of surgeons operate as early as possible after diagnosis, regardless of the time elapsing since onset.

A questionnaire was addressed to all members of the Southern Surgical Association as follows: "Do you operate all acute cases immediately after diagnosis is made regardless of time elapsing since attack began?" Second, "Do you remove the appendix in all cases?" Their replies are classified under three heads to each question, yes, no, and yes with exceptions. To the first question, 54 replied yes, 25 no, and 16 yes with exceptions. To the second question, 16 replied yes, 67 no, and 14 yes with exceptions.

Many replies were guarded and it required careful study to analyze their views. Unquestionably the majority of the members of the Southern Surgical Association are operating immediately on all acute cases regardless of the time when seen. A large majority are not removing the appendix at the time of operation in an abscess case, believing that it is a better practice to leave the appendix if it does not readily come to hand. My associate, Dr. Boice, and I have followed the latter practice except in rare cases with other complicating diseases that are unsuitable for local or general anesthetic.

Since July 1914 to March 1927 we have operated upon 360 acute perforative or abscess cases of appendicitis at Park View Hospital and have had an operative mortality of twenty-three—6.4%. It was necessary, in our opinion, to drain all of these. There were a few appendices perforated and securely walled off by the omentum which was not detached but amputated along with the appendix, not drained, not included in this series. Peritonitis has not been mentioned as we believe that all cases of perforative appendicitis have peritonitis of a greater or less degree, and its extension has been the source of our greatest mortality.

We have operated upon 1658 patients, primarily for appendicitis, and 534 appendectomies were secondary. Of these 1658 primary operations, 360 were perforated cases with or without abscess, 22%, almost one in every four. Seventy-six of these patients were fourteen years or under, with five death, 6.5%.

There were 284 adults, with eighteen deaths, 6.1%. In 279 of the three hundred and sixty the appendix was removed primarily, and fourteen died, 5%. In 81 cases it was thought best simply to drain abscess or peritonitis owing to difficult removal or desperate condition of the patients, nine of these dying, 11%. It is interesting that of the 360 patients, 277 were white with fourteen deaths, 5%, and 83 colored, with nine deaths, 10.8%. We think this difference due to late hospitalization, many of them in desperate condition, with spreading peritonitis following violent purging.

All of these patients were operated upon by one or both of us and received practically the same post-operative treatment.

If we feel reasonably certain of the diagnosis of acute or perforative appendicitis, with or without abscess, we operate immediately and make a McBurney incision, varying it slightly as we think the appendix high or low. We are accustomed to work through it and feel safer about drainage. The general abdominal cavity is carefully walled off before attacking appendix or abscess. If appendix is removed every effort is made to bury stump to prevent fecal fistula. We have had only one persistent fistula requiring operation for closure. If the abscess is high, flank stab drainage is used and often we drain through stab wound to outer side of incision so as to prevent breaking down of wound which is occasionally followed by incisional hernia. Only five hernias have come to our attention. Penrose soft rubber, three to five pieces, is almost always used. These are carefully placed, according to location of abscess or perforated appendix. If the pelvis has been invaded one should be very careful to carry drainage to bottom and leave it there on withdrawing carrier. Drainage is shortened after the third day and is out by the seventh. In our opinion, the question of removing the appendix in an abscess case should be left to the judgment of the surgeon who must take into consideration the length of time necessary, amount of trauma, danger of spreading infection and, above all, the general condition of the patient. It is better for a patient to have two operations than one that causes death. There is very little danger in draining an abscess but the risk of removal is often five fold if the appendix does not readily come to hand. Practically all that require drainage receive a liberal amount of saline subcutaneously during operation, and a fair number, immediate gastric lavage. On returning to warm bed, all are turned on right side and head of bed elevated only if abscess is in pelvis. Post-operative orders are all hypodermoclysis they can take, usually 1500 to 5000 c.c. in twenty-four hours; liberal amounts of morphine every four hours; proctoclysis of soda or glucose or saline solution, if stump of appendix has been satisfactorily buried. Nothing by mouth for twelve to twenty-four hours; then, small amounts of water. Gastric lavage is done when indicated. Liquid diet is not allowed until third or fourth day and all vomiting has ceased. Enemas are begun usually at the end of forty-eight hours. During the last three years desperate cases have received intravenous glucose and insulin when indicated. We have not done blood transfusions as we have thought them of little benefit in perforative appendicitis without hemorrhage. We have had no serious post-operative hemorrhages except in one haemopheliac who survived without transfusion. Mercurochrome has been used intravenously in two cases without benefit. Four of the cases that died had secondary enterotomies. A few lived that had primary enterotomies. We think this a valuable procedure and will probably use it more frequently.

Children, and some adults, develop an acidosis very rapidly if there has been much vomiting, and a few, an alkalosis. There is an associated dehydration. These complications are treated by the free use of saline solution subcutaneously or intravenously and glucose, intravenously.

Reviewing several of the recent papers giving classifications and mortality, one is surprised at the large number of general peritonitis cases that survived. In our series we are unable to say which patients had general peritonitis except those that were shown to have it at autopsy; and we believe that all those that did have it died. There is often general abdominal rigidity in patients who have a large free exudate but are culturally negative. We believe the clinical diagnosis of general peritonitis in many surviving patients is inaccurate and should be rarely made. Many of those that recovered must have had a local peritonitis of greater or less degree but not a general peritonitis. It is inconceivable that drainage of one side of the abdominal cavity would clear up such infection without leaving walled off abscesses in other portions of the abdominal cavity in numerous patients even if they survive. Seven of the thirteen patients coming to necropsy showed from one to many abscesses throughout abdomen.

Of our twenty-three patients that died, we were able to obtain thirteen necropsies and brief summaries of these cases follow:

1. No. 698, Mr. J. K., white, age 17, sick seven days taken suddenly worse after a wrestling match. Purged twice with calomel and three times with salts. Entered June 14th, died July 2nd. Diagnosis undetermined on admission, observed for several days when transpleural drainage of abscess in splenic region was done. Later, drainage of abscess in gall-bladder region and a third abscess was opened in left inquinal region. Never any symptoms suggestive of appendicitis. Autopsy showed multiple abscesses secondary to ruptured tip of long pelvic appendix.

2. No. 4863, Miss J. S., white, age 16, admitted first Nov. 9th, 1919, with large pelvic appendix abscess of four days duration. Abscess drained, concretion removed, recovery. Second admission Nov. 20th 1920 with another abscess in left tubo-ovarian region, leucocytes 34,000. Operated Dec. 1st, appendix, left tube, and ovary removed. Died four days later. Autopsy general peritonitis.

3. No. 5017, Master J. P., white, age 12, convalescing from mumps, sick with abdominal symptoms four days, purged with calomel. Large abscess around head of cecum extending into pelvis and rather extensive peritonitis, leucocytes 19,200, temperature 103. Admitted Jan. 21st, 1921, died Jan. 28th, 1921. Autopsy showed abscess in pelvis and numerous small pockets of pus throughout left abdomen between matted coils of intestines.

4. No. 6809, Mr. J. C. T., white, age 19, sick three days, purged with calomel and salts, leucocytes 16,600, temperature 102.6, pulse 112. Immediate operation, findings, small appendix abscess beneath and attached to liver; appendix removed. Developed subdiaphragmatic abscess. Repeated aspirations for pus, small mid-line epigastric incision (exploratory) under local anesthetic, digital search for pus on upper surface of liver, no pus found but dense adhesions encountered. Died 41 days after first operation. Autopsy, Subdiaphragmatic abscess extending below liver and perforating gall-bladder. No peritonitis. Pneumonia right lower lobe.

5. No. 9358, Master E. C., white, age 7, sick two days, seen by his doctor day before admission. Temperature 101 and a diarrhoea. On admission temperature 102, pulse 140, leucocytes 20,000. Immediate operation, McBurney incision, appendectomy, drainage. Rectal temperature on operating table 105. Post-

operative diagnosis, acute gangrenous perforative appendicitis with extensive peritonitis. An enterotomy was done 3rd day. Died 6th day. Autopsy showed general peritonitis with pockets of pus under liver, stomach, and in pelvis. Small intestine almost gangrenous in areas.

6. No. 9562, Mrs. E. E., white, age 54, sick ten days frequent purges, leucocytes 24,000, temperature 101, pulse 116. Immediate operation, findings, appendix abscess, appendix removed. Four days later there were symptoms of obstruction enterotomy was done. Death two days later. Autopsy showed abscess, wall intact, no peritonitis. Cause of death, myocarditis, nephritis and possible septicemia.

7. No. 11,136, L. M., colored, age 21, sick seven days, purged, temperature 101, pulse 120, leucocytes 7,400. Admitted July 21st, 1925, immediate operation, died thirteen hours later. Post-operative diagnosis, general peritonitis. Appendix sloughed, stump not buried, quantity of pus in pelvis and two round hard concretions present. Autopsy revealed pockets of pus throughout abdomen. Appendix stump not leaking.

8. No. 10,871, I. R., colored, age 14, sick five days vomited for two days before admission, took salts and castor oil. Admitted May 29th, 1925, died June 4th, 1925. Temperature 100.4, pulse 100, leucocytes 16,400. Immediate operation McBurney incision, large appendix abscess extending into pelvis, appendix not removed. Continuous climbing temperature to 105.5, June 2nd, blood culture positive for motile bacillus. Autopsy, abscess pocket well walled off. No pus in cul-de-sac. No obstruction or peritonitis. Cause of death septicemia.

9. No. 10,474, A. F., colored boy, age 15, sick three days purged, temperature 102.2, pulse 120, leucocytes 17,000. Admitted March 4th, 1925 and operated four days later. Findings, large appendix abscess in pelvis. Appendix not removed. Symptoms of obstruction so enterotomy was done March 11th. Death occurred three days later. Autopsy showed bilateral pneumonia, pericarditis, pelvic peritonitis, no evidence of peritonitis in upper abdomen.

10. No. 8,215, I. C., colored man, age 80, sick five days, repeatedly purged with castor oil, leucocytes 24,000, temperature 98.6, pulse 88. Admitted August 9th, 1923, operated next day, findings, large abscess—appendix not removed. Developed post-operative obstruction and enterotomy done under local anesthetic three days later, died next day. Autopsy findings, enterotomy three and half feet above ileo-caecal valve, no peritonitis, appendix ruptured. Death probably due to senility and sepsis.

11. No. 9,586, L. L. B., colored female, age 49, sick ten days, purged, leucocytes 12,200, temperature 100.4, pulse 96. Admitted August 3rd, 1924, operated next day, died two days later. Operative findings, moderate size appendix abscess—appendix not removed. Temperature rose to 105.4 and pulse to 140 at death. Autopsy findings, abscess draining satisfactory, large acutely inflamed perforated appendix and three concretions. Large uterine fibroids. Nothing in abdomen to cause death. Probably due to septicemia, myocarditis, and fatty heart.

12. No. 492, G. Q., colored boy, age 15, sick seven days purged daily and part of the time three times a day. Admitted Dec. 8th, 1915, temperature 101.1, pulse 130. Diagnosis, diffuse peritonitis secondary to perforative appendicitis. Operation under local anesthetic, McBurney incision, drainage, appendix not removed. About a quart of thin foul smelling colon pus which was under pressure

escaped. Autopsy showed extensive diffuse peritonitis with multiple abscesses secondary to a ruptured appendix.

13. No. 4,936, W. H. K., colored man, age 18, sick two days, drastically purged, practically aneuric albumin three plus, hyaline, granular casts, blood one. Admitted Dec. 19th, 1920, immediate operation, acute perforated appendicitis with rather extensive peritonitis with free pus in pelvis. About two thirds of appendix had sloughed and was removed at time of operation. Died eight days after operation. Post mortem findings, considerable free seropurulent fluid, generalized adhesions. Diagnosis, general peritonitis, involving upper and lower abdomen.

	Children 12 yrs. and under		13 and 14 yrs.		White Adults		Colored		Total of all Classes		
	No.	Deaths	No.	Deaths	No.	Deaths	No.	Deaths			
Acute Perforated—	21	3	5	0	114	3	22	0	162	6	3.7%
Abscess Appendix Removed—	22	0	7	0	60	5	28	3	117	8	6.8%
Abscess Appendix Not Removed—	18	1	3	1	27	1	33	6	81	9	11 %
	61*	4	15*	1	201	9	83	9	360	23	6.4%

Dr. Foy Roberson, Durham: A paper of this sort deserves a lot of discussion. The title of the paper covers a lot of ground,—with or without abscess. Dr. Willis said the ideal thing was to operate early, but unfortunately you cannot always do that because the laity is not entirely educated to that necessity. That is absolutely true, and a lot of us surgeons and young practitioners have not been educated to that either. I know I have been to see a patient in the middle of the night, with a pain in the abdomen. I remember one patient that had a violent pain and I thought she had kidney colic. I called her doctor next morning and told him this. After visiting her the next day he told me the patient had a temperature of 101 and an abscess. So it is not only the laity but the surgeon who may make this mistake. There is one point about the whole thing that I believe would help us: in acute appendicitis I think we often look for two severe symptoms. Stomach ache and severe nausea should be indicative of appendicitis, and a leucocyte count would be very helpful. Doctors who live in this vicinity and have charge of many young men at the University are very alert and it is seldom that one of those cases have to be drained. We all know that appendicitis is a disease affecting young, active, vigorous adults, and we have twenty or twenty-five cases during the year from Chapel Hill and Duke University, but I can recall but one death that has occurred among the students, and that was ten or twelve years ago in a boy who had a severe case with general peritonitis. It is not only that these cases do not die, but it is seldom that one has to be drained because the doctors in charge are very alert for a case of appendicitis. One doctor said to me the other day, "What will cause a stomach ache other than appendicitis?" I saw this patient he was speaking of. His temperature and pulse were normal, he had a generalized stomach ache, his tongue was a little coated; he was not especially tender

*If considered as in paper published in Vol. 87, Journal, Southern Medicine and Surgery, Oct. 25th, 1925, there would appear to be 99 cases. This discrepancy may be accounted for by acute, gangrenous, unruptured cases, drained for fear of contamination and by simple drainage of abdominal wall.

over the appendix but the stomach ache persisted after an enema. The leucocyte count was rather high and we made a diagnosis of appendicitis and operated. The appendix was not tender because it was found back under the intestines, but I believe it would have perforated in a few hours. I believe if surgeons, doctors and the laity would learn to impress upon themselves that appendicitis is not a violent thing to begin with but only becomes violent after being allowed to go on, we could make the diagnosis early and operate early. I have had the experience of trying to tide a patient over and having him go from bad to worse, whereas if I had operated earlier it would have been far better.

Dr. J. T. Burrus, High Point: A few years ago I thought that probably the last word had been said about appendicitis and I well remember the wisdom that came from our departed and much beloved teacher, Dr. J. W. Long, on this subject. In the army if we got a very acute appendix it was certain to be a case that had gone on for sometime. The division surgeon was notified of this. He next reported it to the regimental surgeon with a question of why this had happened. In a few instances the thing went to court martial. We must deal with these cases immediately. I believe that the time to operate for appendicitis is when you diagnose the case appendicitis, whether it is six, twelve, or forty-eight hours. I cannot see any reason for waiting for the so-called late operation. I don't see what is to be gained by it. The doctor perhaps needs a little education in making the diagnosis of appendicitis. A patient does not always appear to be exceedingly ill when he has an acute appendix and it is these symptoms of pain in the stomach, associated with a little nausea and discomfort, that we need to mark. A quick leucocyte count, a quick differential, cannot be objectionable in these cases, and it is information that we should have. If this can be done the other questions involved in Dr. Willis' paper would call for no discussion whatever. If we would treat appendicitis as we would handle intestinal obstruction—and it is nothing more than intestinal obstruction—I believe we would lower our mortality. Purgation, or anything by mouth, in cases of intestinal obstruction is certainly contra-indicated.

As to the removal of the appendix or the drainage of the abscess, I get them out when we can and I believe it is the safest thing to do. I think the stay of the patient in the hospital is lessened and the mortality lowered by doing that.

As to the question of enterotomy, I believe enterotomies in these extreme cases have saved many lives and I do not hesitate to do an enterotomy and if one doesn't work I will pick up the gut a little higher and do another, and if that doesn't work I don't hesitate to do another. As a rule when they do not work it is because we haven't the enterotomy opening sufficiently high.

Dr. L. A. Crowell, Lincolnton: For fifteen years I have operated on all cases of appendicitis as soon as the diagnosis was made, and am satisfied that I have made no mistake in so doing. I honestly believe that the misinterpretation of the Ochsner treatment of appendicitis has caused more deaths in this country than this great man with all of his ability was able to save in his forty years of surgical practice. I think

the general practitioner misinterprets his meaning and in trying to save his patients from an operation allows them to get into a desperate condition and many deaths result. We would suppose that all of us would now know enough not to purge a case of appendicitis, yet it is done every day. Whether this is the fault of the laymen or the physician or the surgeon I do not know, but in looking up 208 cases of mine, I found that in that series that numbers of them had been purged and the mortality in those cases was much higher, which was evidently due to the purgation.

The question has been asked, what would cause pain in the abdomen besides appendicitis. It is a good idea to look upon a pain in the abdomen as appendicitis because a great percentage of them are. The diagnosis can be easily made by a blood count. Any infection inside of the intestinal canal will not produce a leucocytosis. In order to have a leucocytosis you must have trouble outside of the intestinal canal. Intestinal toxemia due to errors of diet does not produce a leucocytosis.

I know nothing that gives so much relief as post-operative lavage. About twenty-four hours after operation the patient may bloat up and occasionally vomit a little black material. If you lavage the stomach it will give relief. If he has a return of the symptoms he will call for the stomach lavage in spite of the fact that it is very unpleasant.

I believe in enterotomies. I think many lives are thus saved and we should not be afraid of it. If I have a patient who is not relieved by gastric lavage I go in and pick up the first loop of intestine that presents itself and do an enterotomy. In one case, I failed to anchor the tube to the intestinal wall, the tube came out in 24 hours. No fecal discharge occurred afterward, while it had been rather free beforehand. The parietal and visceral surfaces heal together very rapidly. I think we have all noticed, in long operations, the surfaces of the peritoneum began to stick together before the completion of the long operation.

Dr. A. T. Pritchard, Asheville: I think that the mortality rate in the types of cases that Dr. Willis has brought before us depends very largely on the post-operative management on the one hand, and on the other hand on the individual equation. These patients are usually nauseated for a day or two before they consult a doctor and they are completely dehydrated and, in my opinion, most of these patients who die do so from an acidosis. I have been convinced for sometime that you get comparatively little food into the stomach and I am tremendously impressed with the fact that you must get the fluid through the circulation or under the skin and the ideal way to do this is through the vein and I think all surgeons need a highly developed technic along this line. I am thoroughly convinced that the successful surgeon who is equipped for intravenous administrations in these cases will save many lives, and I am sure if we will give more of these patients a routine glucose solution intravenously it will prove very beneficial.

I was very much interested in what Dr. Burrus said. I have done a great many enterotomies on these cases and it is apparent that the enterotomies that are carefully done will nearly always be successful. I am glad to hear him say that if one doesn't work well he keeps going

higher and higher on the intestine until it does work well. I am sure I have fallen down on this because I haven't gone high enough.

Dr. D. A. Garrison, Gastonia: The fact was brought out by one of the speakers that the blood count means a great deal. I believe it does but in a case I operated on ten days ago with a gangrenous appendix the blood count was 7,000 and in going in there I found the gangrenous appendix attached to the uterus. This girl was 23 years old, five feet and five inches tall, and weighed 210 pounds. The blood count of 7,000 on that case amounted to nothing, but the sedimentation time was the important thing. In this girl it was 25 minutes. We found free pus all over the abdomen. This case had gone on for four days and the prognosis looked very bad. I just want to emphasize that the sedimentation in connection with the leucocyte count means a great deal. The leucocyte count doesn't always help in these cases. The girl is still alive.

Dr. T. D. Sparrow, Charlotte: I think it is pretty well agreed that the best time to operate on an appendix is as soon as the diagnosis is made, but I don't believe the diagnosis is always so easy to make, especially in children, as has recently come under our observation in two cases. One was a child about thirteen years of age whose attack began after eating twenty radishes. He developed a diarrhoea with some temperature and a mild amount of abdominal pain. There was no tenderness over the right iliac fossa but he had a mild amount of vomiting. That evening his temperature rose and during the night the temperature rapidly fell. The next day there was no doubt that the boy had an abscess which operation proved to be true. Following that, within two days, I saw another case who started his symptoms by eating Easter eggs. This child had practically identical symptoms. The first case had a leucocyte count of 24,000, the second of 23,000. I saw him three times within 24 hours. The chest was negative; rectal examination was negative. I was particularly interested in this case because of the one I had just seen where the findings were negative as far as the appendix was concerned. Later he showed signs in the chest.

As far as purgation is concerned, of course, the doctor avoids it, but it has been our experience that the family has usually given the child a purgative as soon as he began to complain of pain in the abdomen.

As to removing the appendix, it is our practice to do it always, carefully walling off the abdomen. Lately we have had a great many cases of retrocecal appendix and I am wondering if the position of the appendix hasn't a great deal to do with the disease of it.

Dr. T. C. Bost, Charlotte: I want to say just a word about enterotomy. I am highly in favor of it for the simple reason that our fecal fistula cases practically all get well. That means that nature is looking out for an opening and allows the intestine to decompress itself and get rid of the gas and toxic material and recover. I do an enterotomy in these cases and in resection cases, especially in malignant ones or gangrenous loops, but I think we may overdo this subject in view of some recent experimental work conducted in Kansas City where they found that the dogs lived longer when enterotomy was not done. They do this work all in the upper intestinal tract. They severed the intestinal loop,

sutured up the end and did the enterotomy in the proximal end. In the series in which they did this enterotomy the dogs died more quickly than the ones in which the enterotomy was not done. They accounted for this by the fact that the enterotomy drainage so rapidly depleted the patient and reduced his blood chloride content that it was another drainage factor in addition to the obstruction and carried him off much sooner. The point that we get from this is that when we go to do an enterotomy, instead of going in blindly and grabbing up any loop be sure that you get down some distance from the jejunum for if you get a reasonable distance away you will not deplete the patient so much.

Dr. Sparrow spoke of the cases that do not drain after enterotomy is done. It has been my experience that when the enterotomy tube does not drain we have a paralyzed bowel and that is a hopeless case, and it is not worthwhile to do anything more.

In regard to the administration of fluids, that is one of the most important post-operative treatments. I don't think the doctor can go by in the morning and put a pint of saline solution in the veins, another pint in the afternoon, to supply the body needs of that patient because the demand for fluids is the greatest thing we have to consider. Crile pointed out a number of years ago that patients should be supplied with from two to five gallons of fluid. You cannot do that by giving it to the bowel in small quantities. Fluids can be given very satisfactorily by bowel for the first twenty-four to forty-eight hours if you haven't a silent peristaltic action. If the bowel is distended the fluid will not be absorbed. I think the most satisfactory way to give the fluid is subcutaneously, not to distend the skin quickly for five or ten minutes for that is all wrong and you make the patient very sore. Put the needle in and leave it thirty-six to forty-eight hours and let the fluid come in at a regular interval by elevating or lowering the container so that the patient will not become unduly distended. In a few hours you can run two gallons under the skin and it never distends the skin. This is the most satisfactory way to give the patient a continuous flow of fluid.

Dr. L. S. Booker, Durham: I thought there was nothing new in regard to appendicitis, but Dr. Garrison's remarks about the sedimentation test are very interesting. I confess my ignorance and desire to know something about it. I want to agree with practically everything that has been said but one important thing has not been touched upon and that is the length of the operation, the time consumed in getting the appendix out, which will at least affect the mortality rate in acute appendicitis. The amount of the anesthetic required is a most important factor. Unquestionably a short, quick operation, with a minimum amount of anesthesia and handling, has saved many lives, whereas an hour or an hour and a half has often proved fatal.

Dr. D. A. Garrison, Gastonia: This sedimentation test was brought out by the New York Surgical Society less than a year ago, and Dr. Polak was one of the men who was very much interested in it and in favor of it, for the purpose of determining the prognosis of conditions. You take one or two drams of normal blood from the vein and put into that anything that will keep it from clotting. Normal blood will clot in

two or three hours. Abnormal blood will clot in less time, and the sediment will go down. It will precipitate in this special little tube and they advise where the sedimentation test is under 25 not to operate because that is evidence that the case is hopeless. I have seen by this test several cases that were down to 15. If it is under 30 I do not operate if I can possibly avoid it and that is one of my real signals whether to go ahead or stop. In all these cases of extreme infection if there is a great deal of pathology it will show from 40 on down. With this sedimentation test you can tell pretty well which way your patient is going, whether he is improving or otherwise. I have never seen a patient live where it has gone to 12 minutes. I make the prognosis in many of these cases in this way. The amount of pathology will determine the time. The article I referred to came out in the *Journal of Gynecology and Obstetrics* sometime just before Christmas, perhaps in the November number. I have been using it ever since and it is quite worth while.

Dr. B. C. Willis, Rocky Mount (closing): Regarding Dr. Roberson's point about diagnosis, you will notice I said provided the diagnosis is made. Of course, if you have a case in which you are in doubt, you should not operate. A kidney case if in the hospital can be very readily diagnosed by a cystoscopic examination, etc., which we make in two hours after the patient has arrived.

Water can be very well given under the skin, as was brought out, and the pain can be relieved by the use of a little procain ½% in the solution. We put one ounce to every 750 cc. of saline given.

Dr. Garrison speaks of a case with the low leucocyte count of 7000. I would say that there was an additional blood count needed, a differential. We see lots of low leucocyte counts with perforation and gangrene. We had one case at our hospital with a count of 3,500 who had also a perforation.

Dr. Bost has well brought out the fact that enterotomies should be carefully placed. I don't believe in high enterotomies. The patient loses his fluid so rapidly that he is handicapped and if he gets well he does so in spite of the treatment. In the enterotomies in those patients who are dehydrated and are readily shown to be in a state of acidosis or alkalosis, the enterotomy tubes should be irrigated every three hours with normal saline solution, and also in all cases where you have to do a resection and an enterotomy. It is remarkable to see how these people come back. We put in probably two to four ounces and block the tube, not letting it drain for some time until it is thoroughly irrigated.

As to the sedimentation test, we have been doing that on a certain class of cases but have not seen fit to do it on cases of acute appendicitis.

INTESTINAL OBSTRUCTION AS A RESULT OF MECKELS DIVERTICULUM

REPORT OF TWO CASES

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Meckels Diverticulum as a remnant of fetal life occurs in about two per cent of individuals. Osler reports finding twelve in 350 autopsies. It

is of great interest because it is occasionally a cause of intestinal obstruction. Fagge thinks that obstruction takes place from Diverticula as frequently as from other bands. Diverticula are found in the lower third of the ileum, usually about three or four feet from iliocecal valve. The duct is accompanied by the omphalomesenteric vessels, early in the second month, closure of the plates forming the abdominal wall divides these canals into an extra-abdominal segment, and intra abdominal portion. Both segments atrophy with the establishment of placental circulation, the remains of the former being found as a cord lying in Whartons jelly in the umbilical cord. The intra abdominal portion passing from ileum to umbilicus sometimes as an open canal or as a cord; it often ruptures and disappears; occasionally it forms a cyst. The duct may remain patent for a short distance from the ileum forming this Diverticulum Ilei (Meckels). Now and then the cord like remains hanging from its tip, or connecting it with the umbilicus; with or without these, the Diverticulum may be found attached to the mesentery, omentum, intestine, or parietal peritoneum. This connection is usually considered inflammatory in origin. Fitz after examining many specimens says that not infrequently it is an omphalomesenteric vascular connection. Lamb has made a very careful analysis of 185 cases of this interesting remnant of embryonic life which tabulated, gives the following result in regard to the location of Meckel's Diverticulum. In 39 or 21 per cent, the Diverticulum was found near the ileocolic valve. In 20 cases or 10 per cent, it was found one or two feet above the valve. In 22 cases or 12 per cent, it was from two to three feet; in 8 cases from four to five feet; in 4 cases from five to six feet; in 1 case ten feet above; in all, 98 cases of the 185 cases reported. In 62 other cases no measured distance was given, but the ileum is stated or implied. Twenty-one cases remain in which the anomaly was in the jejunum or duodenum; duodenum 7 cases, jejunum 14. Fitz in a most exhaustive article on "Persistent Omphalomesenteric Remains" has collected all material facts pertaining to Meckels Diverticulum with especial reference to its influence as a cause of intestinal strangulation. As a result of careful study of this subject he has come to the following conclusion:

(1) Bands and cords as a cause of acute intestinal obstruction are second in importance to intussusception alone.

(2) Their seat structure and relations are such as frequently admit their origin from obliterated or patent omphalomesenteric vessels, either alone or in connection with Meckels Diverticulum, and oppose their origin from peritonitis.

(3) Recorded cases of intestinal obstruction from Meckels Diverticulum in most instances belong to the foregoing series.

(4) In the region where these congenital causes are most frequently met with an occasional cause of intestinal strangulation, the vermiform appendix is also found.

Meckels Diverticulum may become a cause of obstruction when the free end becomes attached to a fixed point, when it becomes a constricting band, if a loop of the intestine is ensnared underneath it. In 23 cases collected by Cazin, 19 by Sir Frederick Treves the attachments were as follows:

Near Umbilicus	10
Near Inguinal Ring	1
Near Femoral Ring	1
To Small Gut	9
Cecum	1

As mentioned before, strangulation can occur only when both extremities are fixed, either as a congenital condition, or later when the free end becomes adherent to some fixed point. That in most cases where a Diverticulum causes an obstruction the free end has found a firm point of attachment is shown by the cases tabulated by Cazin. He collected thirty cases of intestinal obstruction caused by Diverticulum, and of this number, in twenty-five, the free end was found adherent. The condition is sufficiently rare to impel me to report the following cases:

Case 1: Mrs. E. R., age 38, married, family history of no interest, mother of several children, had the usual diseases of childhood, otherwise uninteresting.

Two and one-half years ago I drained a "walled off" appendiceal abscess in the usual manner, making no attempt to remove the appendix. She made a good recovery and on leaving the hospital, I told her, as is my custom, with all such conditions that she might in the future have trouble as a result of organized adhesions, or an acute "flare up" from the old appendiceal stump. I heard nothing from her until August, 1923, was called about 6:30 p.m. and was told that they thought she had appendicitis again. The old condition immediately flashed across my mind. Upon arrival found her writhing in pain, normal temperature and pulse with acute diffuse abdominal pain, nausea and vomiting. The pain was wave like, physical examination revealed very moderately distended abdomen, slight general rigidity more marked over McBurneys point. The most logical conclusion to arrive at was that the stump of the old appendix was taking new inflammatory symptoms, or there was obstruction due to organization and contraction of the old adhesions. Laparotomy was immediately advised and accepted. Under ether anesthesia a right rectus incision was made about six inches in length, peritoneum opened and a quantity of serous fluid gushed forth, the next second I found a Meckels Diverticulum about the size of a man's thumb as an offshoot of the ileum about three feet above ileocecal valve with its distal portion attached with a whip cord like band to the parietal peritoneum at a point about the level of the crest of the ileum or anterior superior iliac spine. An upper segment of the ileum had become ensnared into this trap and was being strangulated, likewise the Diverticulum was being strangulated from pressure, in fact, it was almost gangrenous. Its distal end was divided between catgut ligatures and released, and the Diverticulum was removed from its attachment to the ileum in the same manner that we remove an appendix.

The site of the old appendix was only a tiny papilla of a scar tissue, being practically all sloughed away, and only a few tiny cob-web adhesions were present to tell the story of the old circumscribed abscess. Abdomen closed without drainage, and the patient left hospital in fourteen days, having entirely recovered.

Case 2: Little Katie Lee Sugg, age nine, from Ayden, N. C., referred to me by Dr. W. E. Dawson, of Hookerton, N. C., was admitted to Parrott Hospital, February 1st, 1927, about six p. m. Had the usual diseases of infancy and childhood. Was taken three-thirty a. m. with severe cramping pains in abdomen, which were diffuse, very tender to touch, and particularly so over McBurneys

point. Likewise there was board like rigidity over this site. There was also nausea and vomiting. No distention. W. B. C. 18,000. Pulse 90, temperature 99, urine negative. Diagnosis of acute appendicitis made, immediate operation advised, and accepted. Through Gridiron incision, three inches in length abdomen opened, quantity of serous fluid gushed forth. Appendix only very moderately inflamed, was removed. A Meckels Diverticulum was observed as an offshoot from the ileum, and about three feet above the ileo-cecal valve. It was of the same calibre of ileum, very acutely inflamed, in fact, almost gangrenous, and outer extremity firmly adherent to parietal peritoneum, and a segment of small bowel had become caught in this trap, with consequent obstruction. The Meckels was removed, abdomen closed in usual manner, without drainage. The patient made complete recovery, leaving hospital on fourteenth day.

Dr. J. T. Burrus, High Point: I take this opportunity to thank Dr. Parrott for his paper and arise to bring out one thing, the part of the discussion that will apply in this case. Dr. Booker brought out the point in discussing the former paper which I think sounds the keynote in many cases, that is the time consumed in handling these intestinal cases and the selection of the anesthetic. I believe if you can do a quick operation under spinal anesthesia it will lower the mortality.

RAMBLING REMARKS ABOUT A FEW SURGICAL DISEASES OF THE ABDOMEN

By F. Webb Griffith, A.M., M.D., Asheville, N. C.

When our chairman in his usual gracious and flattering manner requested me to present a paper before this section I, in a moment of impetuousness, accepted. Later, when I began to cast about for a subject to discuss which might be interesting and profitable, I realized how hard it was to present a paper before this organization upon an individual subject which would not contain a lot of rehash of etiology, symptoms, diagnosis and treatment well known to all of us. I therefore decided to discuss very briefly two or three totally unrelated abdominal conditions. To treat any of these subjects in the orthodox manner I realize would be a huge task. However, twenty-one years devoted exclusively to surgery and largely to abdominal surgery, does give one a familiarity with the pathological workings of the abdominal viscera, which familiarity does not, as in the proverb, "breed contempt," but rather an ever increasing wholesome respect for these organs.

Two decades ago a visitor in the operating room would hear the surgeon discuss the best way to do a cholecystectomy. Whether after suturing the tube in the gall bladder to allow it to drop back into the abdomen, or whether to suture the gall bladder gently to the peritoneum or whether to fix it firmly to the peritoneum with the overlying muscles. Seldom did we hear much about the technic of cholecystectomy.

A decade ago we were in the midst of an enlivened discussion of the relative merits of cholecystotomy and cholecystectomy. Now I believe all are pretty well agreed that if a gall bladder is sufficiently diseased to require surgical intervention, it should be removed unless there is some strong and obvious reason to the contrary. The reasons which would influence one to do a cholecystotomy would be:

First: In an extremely fat person where adequate exposure is difficult and where the gall bladder is still soft and with that typical bluish appearance which were it not for the presence of stones would lead one to believe that it was only slightly diseased. In such cases we are justified in simply removing the stones and draining the gall bladder, with the strong probability that it will not give further trouble.

Secondly: Those patients who have advanced cardiac, renal and especially pulmonary disease in whom the gall stones are giving marked symptoms. In such cases operation under local or possibly ethylene can be rapidly done and the patient obtain whatever relief the removal of gall stones might give and also a certain amount of relief can be obtained by simply draining a moderately diseased gall bladder. I am inclined to think, however, that even in these cases we are justified in taking the slightly increased risk and doing a cholecystectomy.

Thirdly: As the first step in a two-stage operation. In those cases where the patient is desperately ill especially when it is an emergency operation with a gangrenous or perforated gall bladder with infection fairly well walled off, it is usually wiser to simply drain the gall bladder and later do a cholecystectomy. Such a case was Mr. R. K. who was admitted to the hospital at midnight desperately ill, and upon even casual examination it was obvious that some catastrophe had occurred in the upper abdomen demanding immediate operation.

Operation revealed the gall bladder distended several times its normal size, with beginning gangrene. Upon opening the gall bladder a number of stones were removed and no bile escaped. The patient took the anesthetic poorly, becoming very cyanotic whenever sufficient relaxation was obtained. To have done more than drain the gall bladder and remove the easily accessible stones would have been courting disaster. Three months later the gall bladder was removed with relative safety.

The estimation of the blood coagulation time should be routine preceding all gall bladder operations and if unduly slow, calcium chloride should be given intravenously daily for three days preceding operation as recommended by the Mayos and others.

The terms "ideal cholecystotomy" and "ideal cholecystectomy" have appeared rather frequently in medical literature in the past few years. "Ideal cholecystectomy" consists in opening the gall bladder for the removal of stones followed by the complete closure of the gall bladder wound. Its advocates claim that when a few gall stones are found in the course of abdominal operation for some other trouble, where the gall bladder shows no macroscopic evidence of disease, this method is quick, satisfactory and relatively safe. I have never tried it but I can well understand how in an occasional case through a separate small incision, such an operation may be useful. If the original incision is large enough to approach the gall bladder for the performance of the so-called ideal cholecystotomy, I believe it wiser to take a few minutes more and remove the organ.

"Ideal cholecystectomy" which consists of removal of the gall bladder and closing the abdomen without any drainage, has been revived by Willis, of Richmond. Only recently Dr. Finney stated to me that early in his career he had in a number of cases of cholecystectomy, closed the

abdomen without drainage and that while he had had no surgical catastrophes from it, he had given it up as being illogical and dangerous. Sir Berkley Moynihan says: "There are surgeons who like to close the abdomen after removal of the gall bladder, and there are surgeons who do not. I place myself with confidence among the latter. I never close the abdomen without a drain, though in the days of my adventurous youth I often did so."

We know that even with the greatest care, and with double ligation of the cystic duct, the ligatures will occasionally loosen and some bile escape. Also that in approximately fifteen per cent of cases there are anomalous small bile ducts connecting the liver or hepatic duct to the gall bladder or common duct. These fine ducts are frequently torn during a cholecystectomy, allowing escape of bile. Those two reasons alone should be sufficient indication for drainage in every case. An average size rubber catheter placed down to the stump of the cystic duct and gently surrounded by small plain catgut suture will suffice as a safety valve to direct to the surface any bile which might escape.

The voluminous cigarette drains going to the cystic duct and up to the kidney region are totally unnecessary and strongly contra-indicated as they are productive of masses of adhesions.

Finally, carefully placing a piece of omentum over the stump of the cystic duct prevents adhesions to the stomach and may mean the difference between comfort and discomfort in after years.

Before leaving the subject of the gall bladder I must touch briefly upon the anastomosis of the gall bladder to the alimentary tract.

Cholecyst-gastrotomy and cholecyst-enterotomy are valuable palliative measures for irremediable obstruction of the common duct, whether from stricture or cancer. Every now and then there appears an article advocating this procedure for various and sundry disorders. I believe time will show that except for the indications above, the method is not only useless but dangerous. It is rational to believe that when the gall bladder is connected to the alimentary tract it will sooner or later become infected.

Surgery of the stomach:

Whenever there is obstruction around the pylorus, gastro-enterotomy will, as we all know, give excellent, almost dramatic, results. In ulcers near the pylorus with obstruction, I am convinced that gastro-enterotomy is by all means the operation of choice, disregarding the slight tendency of such ulcers to become malignant later on in life. When we can get practically complete relief of symptoms by a gastro-enterotomy relatively free from danger, we are not justified in doing a far more dangerous operation merely because a small percentage might become malignant later on.

In the hands of men such as Mayo, Horsley, Moynihan and other masters of gastric surgery, resection of the stomach for ulcer may be the wise procedure. But with the average one of us such a tremendously radical procedure, which in our hands would carry a high mortality, is totally unjustifiable.

What is the best treatment for the simple non-obstructive ulcer of the stomach or duodenum, I confess I do not know. Until we know more

definitely the etiology of such ulcers we will probably have to drift along with infolding or excision alone, or either one combined with gastro-enterotomy or pyloroplasty.

The surgery of cancer of the stomach is, to my mind, an almost hopeless proposition. For years we have been urging that our medical colleagues send us the suspected cases earlier. But are our results any better than they were ten or more years ago? How many men in this audience have cases of positive cancer of the stomach living after five years? Again I repeat practically what I have said above, that if on exploration we find an area which we believe to be ulcer but may possibly be malignant are we, the average surgeons of the country, justified in doing a resection? I believe not. The operative mortality would be high and in many and possibly the majority of such cases, the pathological report would show the absence of malignancy.

If on the other hand at exploration the condition is obviously malignant the probabilities are that it is already entirely too far for surgery. I believe that the radical operations for cancer of the stomach will be replaced by some other means of treatment just as radiotherapy has largely replaced the radical Wertheim operation for carcinoma of the cervix.

What shall we do with the pathological ovaries?

How many women ever consult you for pain in the lower abdomen? Isn't it more usual for them to come complaining of pain in the ovaries? In short, pain in the lower abdomen in the mind of the average woman, means ovarian disease. For that attitude I fear the medical profession is largely to blame, for it is so easy when nothing else can be found, to say "you have a little trouble in that ovary" and to proceed with applications, tampons, etc. If the pain continues and the patient should come to operation the poor defenseless ovary has already been indicted and convicted in what in legal terms would be entitled far less than mere hearsay evidence. If the ovary happens to have a few little cysts, as so many do, its fate is sealed. Pelvic surgery has made wonderful advances in the past quarter century but the ruthless removal of the ovaries will stand as a blot for many years to come. I realize that such a statement is superfluous to this enlightened audience, but unfortunately there are scattered throughout our state some who are still removing practically normal ovaries in the absence of any other obviously demonstrable cause for the pelvic pain.

Probably the largest number of pathological ovaries would come under that group of pelvic infections known as pelvic inflammatory disease. This heading may be roughly divided into three groups:

First: The tuberculous. Here it is seldom necessary to remove an ovary, for the chief trouble is usually in the tubes and removal of these foci gives an excellent chance for the other pelvic organs to clear up.

Second: The puerperal: Here it is common to find one tube and ovary involved and plastered down while the opposite tube and ovary are in good condition. Unilateral salpingoophorectomy usually suffices.

Thirdly, and by far the most important, are the gonorrhoeal infections. It is in this group that conservatism gives way to radicalism. If we should through error open up an abdomen in the presence of acute

infection of the tubes and ovaries, we must either admit our error, close up the abdomen and allow the infection to subside, or else be radical, removing uterus and adnexa. For in such cases to attempt conservative surgery upon the ovaries is but adding the insult of an operation to the injury of the infection, which means almost certainly another more radical operation in the near future.

In the chronic cases where the fire has been extinguished and where the ovaries look fairly normal but are more or less covered with cobweb adhesions or plastered to the pelvic wall or to an old hydro-salpinx, it is frequently a hard question to decide what is best to do with the ovaries. Here also experience tends to make one more radical. By saving the ovaries the internal secretion and the psychic effect of menstruation are preserved. On the other hand menstruation is usually painful, there is more or less constant discomfort in the pelvis and there is always the possibility and frequently the probability of another operation. So that in the vast majority of such cases whenever it is necessary to remove the tubes and uterus it is wiser also to remove the ovaries.

We have been taught, and I believe rightly so, that when it is necessary to remove the uterus, in such non-inflammatory conditions as fibroids, certain cases of prolapse, etc., we should save the ovaries. That procedure I have followed, but occasionally have regretted it. In spite of the greatest precautions to preserve the blood supply of the ovaries I have had several cases where, after the removal of the uterus, the blood supply to the tubes and ovaries was sufficiently impaired to necessitate reoperation before the patient left the hospital. At the second operation, on one or the other side the tube and ovary would be found necrotic, friable, with a distinct putrefactive odor, apparently local death from insufficient blood supply. We believe that the ovary has three functions, i.e., that of internal secretion, that necessary to menstruation and that necessary to pregnancy. With the removal of the uterus two of those ovarian functions are automatically abolished, and it is a moot question how long the ovary, in the absence of the uterus, will continue to supply its internal secretion. Therefore, contrary to the generally accepted teachings, I have serious doubts in my own mind whether we are justified in subjecting the patient to the chance of another operation with its attending discomforts and danger for the sake of an internal secretion which may possibly last only a few months.

DISCUSSION

Dr. T. C. Bost, Charlotte: I want to say just a word about malignant conditions of the stomach. I am a little more optimistic about it than the essayist was. In the last five years I have operated upon five cases with no primary mortality. All the patients are alive today and in good health except one. All these cases were late cases. They did not come in until long after they had not been able to eat solid food and were only able to keep a little liquid down. They were vomiting and losing weight. The last case some of the men may recall was reported at the last meeting of the section of the American College of Surgeons in Charlotte. I operated upon this man at the clinic. He was 62 years of age and had lost 60 pounds in weight. Six weeks before he came in he had been unable to

keep anything on his stomach. I did a gastroenterotomy under local anesthesia. He vomited the next day but then this ceased. The day of the clinic I resected the tumor mass under local anesthesia and took out about two-thirds to three-fourths of the stomach. The man has gained 40 pounds in weight and is now looking after his farm. The secret of the success is in doing the operation under local anesthesia and getting the case early enough. The trouble usually is that we do not get the cases until they are almost hopeless. If they come early enough there is no reason why we cannot save fifty per cent of them, even those that come in with a big tumor mass that involves nearly all the stomach and very much emaciated. A gastroenterotomy will prolong life and by doing that under local anesthesia we can save a large percentage of the cases. If they are late coming we should do a simple gastroenterotomy and perhaps a resection of the tumor.

Dr. A. J. Crowell, Charlotte: With regard to conservatism in removing ovaries, I would go a little further and say there should be conservatism in doing appendectomies, cholecystectomies and cholecystotomies. We see quite a number of patients who have had ovariotomies on account of pain in the lower abdomen. We also see a number of cases in which hysterectomies have been done and the patient continues to be miserable until a stone is found and removed from the lower end of the ureter. We have removed stones from the ureters in many cases in which appendectomies had been done with no relief of the symptoms. The same thing is true of cholecystectomy and cholecystotomy. I think it is almost inexcusable to operate on a patient because of abdominal pain without at least testing to see whether or not there is an impacted ureteral stone. An X-ray examination is valuable in all these cases but it is worth little as a rule of itself. It should be combined with ureteral catheterization and firm percussion over the kidney region. Deep percussion over the kidney will practically always cause extreme pain in cases of ureteral stone impaction. This is more diagnostic in many cases than the X-ray alone. An inflammatory condition of the appendix or gall bladder will not produce such extreme pain.

Dr. A. T. Pritchard, Asheville: Dr. Bost said in his cases of carcinoma of the stomach where they had become greatly reduced in vitality the procedure was to first do a gastroenterotomy under local anesthesia. I am sure that is the proper way to handle these cases and I feel that if more two stage operations were done in stomach conditions our results would be very much better. This has been impressed upon me several times lately. With cancer of the pylorus where the patient has been in an extreme condition for a long time I find they will recover strength quickly if we do a gastroenterotomy under a local anaesthetic. If we have to do a major resection of the stomach there is very little hope of recovery. We used to operate on the prostate without a preliminary stage of preparation. Now we always prepare the patient by doing a suprapubic cystotomy and when they come to operation the danger is almost nil. I think these cases of cancer of the stomach are somewhat comparable to the prostatic trouble. If you do a gastroenterotomy well away from the pylorus, having room to resect the tumor, you will save

many of the cases and where the lymphatic glands are not involved a great many cases of cancer of the stomach will be relieved, if not permanently certainly for a great many years.

Dr. C. S. Lawrence, Winston-Salem: Dr. Griffith's paper is very interesting and covers a lot of territory. I personally am quite conservative in pelvic surgery. I save all the parts of the ovary that I possibly can, being careful to preserve the blood supply to the ovary. I have a case in mind that had fibroids that I operated on recently. Both tubes were distended with pus, the left ovary destroyed by a large cyst, the right ovary in pretty fair condition. I removed both tubes, the uterus and left ovary, leaving in the right ovary and being careful to cover it over well. My experience in such cases has been very satisfactory doing it that way, more than when we removed the ovaries because the menopause comes on naturally.

As to conservatism in operation on the kidneys, gall-bladder and appendix, I have seen a few cases of acute appendicitis with a stone in the ureter, on the same side, however. I recall a case that had a stone in the pelvis of the kidney with gallstones and duodenal ulcer all of which were giving trouble. To have done an operation on this patient's stomach for the duodenal ulcer, or an operation for the gallstones or for the stone in the kidney, leaving the other things would not have cured the patient.

Dr. D. A. Garrison, Gastonia: Dr. Griffith's paper is very instructive. As to the acute tube, I remove it for it will have to be done sooner or later. As to the preservation of the ovaries, that is determined largely by the age of the patient. If the patient is over 42 years I remove them and if she is under that I leave them, conserving the circulation as much as possible. I have seen some wonderful results by leaving both tubes and the uterus and conserving the circulation. Any part of the ovary left there does wonderfully in preventing hot flushes, shortness of breath, etc., as the menopause comes on. If you leave one particle of ovary there it will be beneficial.

Dr. F. W. Griffith, Asheville (closing): I agree with what Dr. Bost said. We should always strive for the ideal. That is the only way to make progress, but you take fifty cases of cancer of the stomach coming to fifty different surgeons represented here today and let each of those surgeons do a gastric resection and you will have a certain number of deaths among the patients. If you take those fifty cases, if there is no obstruction at all in the pylorus there is no indication for gastroenterotomy. If there is obstruction a gastroenterotomy should be done by all means. I believe, taking fifty cases of fairly advanced cancers, whether you leave them alone or do a gastroenterotomy, you will have better results with those patients in the hands of the average surgeon than you would have by doing a radical operation. It is possible that the cases Dr. Bost speaks of would have been relieved by gastroenterotomy, and granting that by a radical operation a patient has been cured or life prolonged, there will be two or three others who will be lost by the radical operation so that the sum total of living days will be fewer.

As to the question of the ovaries, I realize that artificial menopause comes on. I spent five years on the gynecological staff at the Johns Hopkins Hospital so have been through the whole game, but in a certain number of cases when you try to save the ovaries you are going to get a plastered down ovary in spite of all you do; there will be a necrosis. We see cases where the ovary is removed and violent nervous symptoms ensue, in other cases they do not. How do we know how the patient would have gotten along had the ovary not been removed? We see many girls twenty-four years old who do not have these violent symptoms after double oophorectomy. I am still conservative in the majority of cases but am merely calling attention to the fact that simply because we have been taught in the past to save a piece of ovary it may not be necessarily the best thing to do. I think in many of those cases we must be a little bit more radical than we have been.

The Chair appointed Drs. Lawrence, Bitting and Garrison a Committee to nominate a Chairman for the Section on Surgery for next year.

Dr. T. C. Bost of Charlotte was nominated.

Dr. Burrus: It is apparent that the medical side of North Carolina in its sectional work, and division of the meetings, is not bringing the greatest good to the greatest number of doctors who attend these meetings. I understand that the House of Delegates is taking up this subject for consideration and there will probably be a rearrangement of the sectional work of this Society. I would like the Nominating Committee to bear this in mind.

Adjournment 12:30 P. M.

MANAGEMENT OF HEAD INJURIES

By Thomas Meares Green, M.D., F.A.C.S.,
Wilmington, North Carolina.

Until recent years much confusion has existed regarding treatment of head injuries due, I think to the mistake of considering the fracture of the skull as the pathological entity rather than injury to its contents.

Not until we shake off this obsolete idea can we ever hope to enter upon the realm of greater things in dealing with brain injuries; for with few exceptions the fracture of the skull has nothing to do with the treatment of brain injuries—the chief exception being depressed fracture of the vault. Often indeed, the fracture serves as a saving grace by permitting the cerebrospinal fluid and blood to escape from the skull into the scalp, thus lowering the intracranial tension and thereby relieving the pressure upon the delicate cerebral cortex. Among many, until recent years and even today, the prevailing idea of treating brain injuries is limited to raising the depressed fracture of the vault and permitting the basal fracture to fight it out with an ice cap and the grace of God.

True, many recover, or supposedly did, while those surgically treated showed practically the same mortality. Investigation of those who recovered without operation reveals a large number of physical and mental derelicts with irritable cortex, failing vision, violent headaches, changed

personality and even epilepsy. These unfortunates are called "wet brains." Many may be reclaimed even at a late date.

Failure of the operative treatment to show better results has been due largely to a lack of understanding of the fundamental pathological principals to be dealt with, which lead us to a failure to recognize the proper time for operative intervention. Today, however, by a definite understanding of these principals the mortality of operative cases has been cut in half and if the moribund cases be eliminated it may be reduced as low as 15 per cent or better, at the same time eliminating almost entirely that large class of mental and physical derelicts who are known as "wet brains" and whose existence, as such, may be due almost entirely to a failure to apply the proper treatment at the proper time.

Naturally many brain injuries are fatal from the beginning, where fatal damage to the skull contents occurred at the onset of violence, but of the other cases, those which are amenable to treatment, there has in late years been developed a technic of management which is simple enough for any painstaking surgeon to understand and which, I am sure will lead to a happy issue in a far greater number of cases than the textbooks would have us to believe, i.e., 68 per cent.

The symptoms complex upon which we base this treatment for acute and chronic brain injuries revolves around the question of intracranial pressure. Formerly with the exception of depressed fracture of the vault, we were taught that until the focal paralytic symptoms developed, no operative interference should be attempted. Later, an earlier method was followed, namely, that of observing the changes in the optic disc with the ophthalmoscope. Today we know that few cases live to develop focal symptoms and if we attempt operation in cases that have waited until choked discs have developed, our operative mortality will equal the 68% of the past or greater.

We have now an instrument with which we can actually measure the intracranial pressure in health, disease and injury and through its use we are enabled to apply such treatment to these cases as to prevent in many patients the condition of medullary compression, medullary oedema and collapse. By means of it and the ophthalmoscope we have discovered that there are certain definite changes in the optic disc, which go hand in hand with increased intracranial pressure and which occur earlier than the choked disc condition. These two conditions serve to confirm each other.

Symptoms: Every case of head injury is attended by a greater or less degree of shock; the symptoms of shock being similar to those with which we have to deal in all trauma. Nor should the treatment of shock vary in brain cases. At this stage we find the patient with the usual pallor of shock, cold and clammy skin, a rapid pulse of 120 or greater; respiration 30 or more; systolic blood pressure about 100, accompanied by wound of the scalp and perhaps escape of blood and cerebrospinal fluid from the nose, mouth, or ear. Later, if a brain injury is present and he comes from under the condition of shock, if he ever does, his pulse becomes progressively slower, as does the respiratory rate, until it is reduced to a pulse of 60, respiration of 18 and systolic blood pressure,

rising to the neighborhood of 160. Here we have the patient passing from a condition of shock into one of irritability of the cerebral cortex with increased intracranial pressure, which may be due to increase in the amount of cerebro-spinal fluid secreted or to a delay in its execution or to oedema of the brain or to hemorrhage or to all of these factors. Spinal puncture at this time and the measuration of the intracranial pressure would likely reveal a pressure above normal, about 16 or greater. At this time the superficial reflexes are exaggerated and there may be present one or more of the special reflexes of Babinski, Chaddock, Hoffman, Gordon, Oppenheim or Koenig. Observation of the eye-grounds will reveal a blurring of the nasal side of the disc or perhaps of both the nasal and the temporal sides.

If nothing be done and the patient is allowed to go on in this condition he may enter the very grave stage of medullary compression with a pulse of 50, sometimes as low as 40, respiration 12, choked discs, systolic blood pressure 200, complete abolition of most of the reflexes, deep stupor with the beginning of Cheyne-Stokes respiration. Intraspinal pressure here will register about 20, sometimes as high as 40. From this condition he may emerge without operation, but will probably develop the later condition known as "wet brain" and become a mental and physical derelict.

If, however, he be allowed to develop the further stage of medullary oedema and collapse, there will be a sudden rise of pulse rate to about 120 or more and more definite Cheyne-Stokes respiration. Appearance of papilloedema of varying degree and high temperature. Death is the inevitable result, no operation or other treatment would save him now.

Careful observation of the eye-grounds with the ophthalmoscope and careful notation of the rate of pulse and respiration and systolic blood pressure, together with the investigation of the reflexes and actual measuration of the intracranial pressure. During the first 48 hours after the symptoms of shock have passed will enable us to treat these cases with a far greater degree of safety.

Treatment: One should have a definite plan of treatment for the cases. First of all avoid anything that will add further shock to the patient during the period of shock. First aid to the scalp injury only, all examinations of the nose and ear should be omitted. Small pieces of cotton loosely tucked into the auditory canal, application of heat, quiet rest and small doses of morphine, just as in any other cases of shock nor should any special neurological examination or lumbar puncture be attempted during this period. Unless the patient can survive the preliminary period of shock, no other treatment would save him. If, however, he does pass through the condition of shock and we find evidence of increased intracranial pressure, other measures must be brought into play as a vast majority of these cases will most certainly develop the condition of medullary compression.

Here with the addition of quiet, rest and superficial heat, as during the period of shock, we add the ice helmet, small doses of opiates for restlessness and the withdrawal of a sufficient amount of the cerebro-spinal fluid by lumbar puncture to reduce the intracranial pressure to at least

one-half of what we find it. Repeating this at intervals of 12 hours, we may tide him through without any surgical procedure.

If, however, we fail to keep the pressure at or below 16, we must then resort to an operative procedure, regardless of whether or not he has a depressed fracture of the vault or a fracture of the base.

Operative interference consists of a subtemporal decompression on the right side in right handed patients, if no focal symptoms exist and vice versa in left handed patients to avoid motor area. If there is a depressed fracture of one or the other side then the subtemporal decompression should be ipso lateral. The depressed fracture should be elevated after the decompression has been accomplished or at a second operation; else the lacerated brain, under pressure, may be forced violently through the opening in the skull when attempt is made to elevate the depressed bone and much brain substance be thus lost.

There are some cases that go very rapidly from the period of shock into one of medullary compression, due to a large subtentorial hemorrhage. One would scarcely get any result from the lumbar puncture and an operation would be highly in order at an early period, but not however, until the shock period has been passed. All cases of depressed fracture must be elevated for fear of epilepsy.

In chronic cases where injuries have occurred years before or where depressed fractures of the vault have not been raised or where we have dismissed a case because of an acute condition not having cleared up under palliative treatment we too often find individuals who tire easily, mentally or physically, who have disturbance of vision, constant headaches, changed personality and even epilepsy. These people are known as "wet brains" and if we can demonstrate increased intracranial pressure in them, a decompression on one or both sides frequently relieves them sufficiently to permit of their resuming their occupation, even after years have elapsed. If a depressed fracture exists the same applies to it, that is, elevate it.

The results in these cases are striking after years have elapsed from the time of the original injury or apparently the slightest blow on the cranium of one suffering with a cardiovascular renal syndrome is sufficient to produce this condition of "wet brain." If increased pressure can be demonstrated, several lumbar punctures will readily relieve it.

CRAIG—Compound fracture, no pressure symptoms, bone elevated. Pressure symptoms later with cyst formation. Decompression and removal of cyst. Struck with golf club.

BROWN—Rapidly rising pressure not relieved by needle. Marked mental symptoms. Meningitis from fracture entering frontal sinus and nose. Death on 4th day. Auto accident.

FALES—Fracture with marked elevation of pressure, no symptoms of pressure. Pressure as high as 35, reduced to 20. Remained 20 for 3 months. Not done since. Refused decompression. Fell on cement floor striking head.

FOXWORTH—Fracture base, pressure 22 unable to control with needle. Decompressed at 48th hour. Tree fell on him.

FOWLER—Admitted several weeks after injury. No increase of pressure, headaches, stupid intellect. Extradural clot, occipital-lobe. Kicked by a mule.

PAIGE—Increased pressure, 16, not controlled with lumbar puncture, spring suture, decompressed, extradural clot. Struck by auto.

GOODYEAR—Increased pressure 30, rising, each time 36 hours. Decompression elevation depressed bone, mid meningeal clot. Fell from motorcycle.

PETERSON—Depressed fracture frontal bone, no dural injury, no clot, negative pressure. Struck by auto.

McGILL—Depressed bone, fracture extending to base, decompression. Refused bone elevation. Epilepsy one year later. Elevation of bone, cured. Struck with club.

WRIGHT—Struck one week before seen. Larke parietal haematuria over linea fracture. No increase of pressure. Decompressed self. Aspiration haematuria, no operation.

SPEARS—Fracture frontal extending into sinuses. Fracture submaxilla, decompressed self through nose. Large haematoma disappeared with profuse nose discharge.

GROGAN—Wet brain, decompressed on both sides.

DOCK—Subtentorial hemorrhage immediate operation, no good.

SINGLETARY—Small piece of depressed bone, dura not torn, extradural clot. Pressure 20, not controlled.

BROCK—Depressed fracture (comp) no pressure symptoms, bone elevated. Motor speech paralysis for weeks and finally cleared.

FOWLER—3 year old child depressed, frontal bone dura not torn, elevated, no intracranial pressure. Dura intact not opened purposely to avoid infection.

DISCUSSION

Dr. J. C. Joyner, New York: I think Dr. Green is to be congratulated on his method of handling acute brain injuries. The treatment we use is along exactly the same lines. He mentioned a light general anesthesia; but we know that the intracranial pressure is increased practically thirty M M Hg. when you give inhalation anesthesia. We are dealing with an increased intracranial pressure to start with, and, of course, we have that much more pressure added to it, which will invariably prove fatal. I am sure Dr. Green will find that he could handle the case equally as well and perhaps better under local anesthesia as under the general.

I think perhaps we leave our drain in a little longer than Dr. Green does, and in the extreme cases we do an occipital decompression, rongeuring away the posterior collar of the foramen magnum and suturing the large end of a catheter to the dura covering the cystin magna. In this method it is possible to obtain excellent drainage of bloody cerebro-spinal fluid and relieve to a marked degree the intracranial pressure, and at the same time the occipital decompression will relieve the swollen edematous brain, and more especially the more important brain stenion.

Dr. Foy Roberson, Durham: This condition seems to be on the increase. This is seen in large and small towns and I think the important thing brought out is that we must have a definite plan of dealing with

these cases; we must have something in mind to go by. Dr. Green has outlined that plan very well indeed. Of course, nothing can be done when the patient is in a state of shock but there is a psychological time when you can do a great deal by proper treatment. I remember several years ago when I was on service in our hospital. We have a rotating service there. I saw a man who had been there a week or ten days before, having been in an automobile accident. He was in an unconscious condition and had had nothing done for him so far as I know. His pulse was around 50, and he seemed in rather bad shape. I did a lumbar puncture and found he had a very high pressure, between 20 and 30. In twelve hours I did another lumbar puncture and found he was regaining consciousness and in two or three days after repeated drainage of the spinal canal by lumbar puncture he was apparently all right. In other words, that is all he needed. He did need something, however, and we should not neglect to follow some definite line of treatment.

Dr. C. S. Lawrence, Winston-Salem: I should like to put a little emphasis on the non-operative care of fractured skulls. It is true there are a certain number of cases that require operation but there is probably not a surgeon in the room associated with a hospital who does not have a case of fractured skull in the hospital nearly all the time. I know that is true in our hospital. We seldom operate upon them. There are certain definite signs and symptoms that tell us when to operate and we try to watch those symptoms and we can often avoid surgical intervention. Drainage of the spinal canal, as mentioned by Dr. Roberson, is of great importance in a number of cases. The brain will stand more trauma than we used to think it could. When I first began to do surgery a great many surgeons were decompressing all the fractures, when as a matter of fact the patient had already had a decompression by fracturing the skull, leaving a crack in the skull for the cerebro-spinal fluid and blood to seep through. We found later on the decompression was not necessary and during the war we had, as you know, a great many head injuries, more than in any other war we have ever had, men coming into the hospital with large skull fractures. I remember one fellow that came to the hospital one night with his right eye gone; it had been shot out. He had a compound fracture in the right orbital region. He was put to bed, given some liquid food and seemed to enjoy it, and in a few days he was sitting up in bed writing a letter home. We took an X-ray picture of him which showed a large, round ball in the left side of the skull. He had practically no symptoms of intracranial trouble and he was sent home.

I remember another case that had a shell fracture through the right occipital region and through the right posterior lobe of the brain. He had a right hemianopsia, and the X-ray showed a shell fragment in the left lobe. I heard from him a short time ago and he still has the shell fragment; so the brain will stand more than we had thought if we will simply let it alone and not needlessly interfere with it.

Dr. Thomas M. Green, Wilmington (closing): I thank the Section for the liberal discussion. I did not mean, Dr. Joyner, to give the idea that I give general anesthetics in these cases. I do all this work under

local. We try to get away from the general anesthetic for the reason you have stated.

The case I mentioned leaving the drain in was rather unusual. I never like to drain more than 24 hours because I think you will agree with me that if it is drained too long you may get out to much cerebro-spinal fluid and have a dry head.

Dr. Roberson spoke of the increasing number of cases and I think that is true. My series represents twenty-eight cases and I haven't gone back of 1919. There were cases before that but I did not include them. With the paving of highways and the increased use of automobiles we have an increasing number of accidents and, unfortunately, automobile accidents are associated frequently with brain and spine injuries.

The case I spoke of that was struck on the head and did not have a fracture; but he had a disturbance of the circulation of the cerebro-spinal fluid.

I would like to say, Dr. Lawrence, that only about 35% of these cases require surgery. The others do well without it and decompression is to be advised only when you cannot control the intracranial pressure with the needle. Lumbar puncture before the patient is dismissed is a good plan.

There were four deaths in this series, one being a moribund case that died soon after entrance to the hospital, one died two hours after entrance, another on the fourth day, one on the fourteenth day, the last two from meningitis. I feel that this is rather a low percentage, yet it doesn't mean anything especially because the series is so small, but it does show what can be done. A foreign body can be located in some silent area of the brain and remain there for life with impunity.

One child came in with a marked decompression where a mule had kicked her and in that case we had no symptoms of pressure and there was no reason for opening the dura. The child had a horrible infection of the scalp from the kick of the mule and I would have been afraid of the extension of the infection into the dura cavity if the dura had been opened.

I would like to mention one other case of a wet brain, a man who was confined to jail because of his behavior at home and who was sent to me by the Judge. He had epilepsy, a changed personality, and he had an old shrapnel wound having served in a Canadian contingent during the late war. He had a pressure when I saw him of 30. He had been on a debauch of cocaine and whiskey to try to get rid of his headache. Lumbar puncture relieved the headache at once. I did a decompression on one side and decreased his pressure to 18. Six months afterward I did a decompression on the other side and brought the pressure down to 10. That man went back to work, is earning a good living and had a responsible position four months after the second decompression.

THE TREATMENT OF FRACTURES OF THE SPINE

By C. S. Lawrence, M.D., F.A.C.S.,

Lawrence Hospital, Winston-Salem, N. C.

Our experience with fractures of all parts increase with the progress of civilization. Good roads and national prosperity enable one out of five of us Americans to own automobiles. Many of us can afford a flying machine and practically all can afford a ride on a passenger or freight train. We are naturally a nation of travelers and the faster we move the better pleased we are.

The spine comes in for its share of damage and it is with fractures of this structure that I propose to deal. During the past seven years my associates and I have dealt with thirteen fractures of some part of the spinal column, to-wit:

Third Cervical Vertebra	1
Fourth Dorsal Vertebra	1
Seventh Dorsal Vertebra	1
Twelfth Dorsal Vertebra	1
Second Lumbar Vertebra	1
Third Lumbar Vertebra	2
Fifth Lumbar Vertebra	1
Transverse Process 1st Lumbar Vertebra	1
Transverse Process 1st, 2nd, and 3rd Lumbar Vertebra	1
Transverse Process 2nd, 3rd, and 4th Lumbar Vertebra	1
Fourth Sacral Segment	2

We have followed the plan of operating on all cases of fracture of the spine where there is cord injury manifested by paralysis. Laminectomy was performed five times in this group out of six cases that had paralysis following injury, the sixth case, a boy sixteen, fell from a tree, landing on the buttock, unconscious for an hour, loss of bladder control for three weeks, no paralysis of legs, came to us four months later, run down in health, deep cough with evening temperature 103, marked kyphos at first and second lumbar vertebra, with an old fracture through body of fifth lumbar, no paralysis, no abscess, moist rales base both lungs. Spine stretched, cast applied, temperature reduced, cough relieved, discharged from hospital on twentieth day to return for further treatment. One year later roentgenogram shows first and second lumbar vertebra healed, no kyphos, the fifth lumbar slightly deformed but healed. I am of the opinion that this case belongs to the class described by Kummel, and later by Baker of Ann Arbor, and called "Kummels" disease, a condition following an injury to the spine, coming on after a few weeks or months, characterized by pain, disability, local signs of bone injury, especially kyphos. This patient is now well (four years after injury) and working daily.

Of the five cases operated on by laminectomy, one died six hours after operation. One shows no improvement, neurologically.

The death; a young man twenty-three, fracture of third cervical vertebra, the result of diving. Laminectomy and autopsy showed complete severance of the cord, paralysis from clavical down.

The case that shows no improvement; a woman twenty-four, struck by automobile, fracture of seventh dorsal vertebra. Complete paralysis below—Compound fracture of tibia and fibula at ankle, right. Compound fracture of fibula just below right knee. Operation revealed fracture of seventh dorsal vertebra, diastasis of seventh and eighth dorsal vertebra, rupture of capsular ligament, dislocation of seventh rib with opening into the pleura, both sides of the spine. A few days later gas gangrene developed in the foot and leg, amputation just below the knee. The patient now (two years after injury) is completely paralyzed from seventh segment down, otherwise she feels well, gets about in rolling chair and keeps herself occupied by hand work.

The other operated cases, one; fracture of twelfth dorsal, complete paralysis. Regained control of bladder and rectum and can walk with aid of crutches, sexual function normal (four years after injury).

One; fracture dislocation of third lumbar vertebra, complete paralysis below, regained control of bladder and rectum, can stand alone and walk with aid of crutches, sexual function normal, now eighteen months after injury.

One; fracture third lumbar vertebra, complete paralysis below, regained control of bladder and rectum, can walk and work as laborer, (now seven years after injury).

The other seven cases in this report, one had fracture through body of second lumbar vertebra, with severe scalp wound, no evidence of cord injury. He left the hospital in a truck, cast applied the seventh day of injury (on his own responsibility) and has not been heard from since. He was a rum runner and preferred a quiet retired sequester for his convalescence.

One; fracture through body of fourth dorsal vertebra with fracture of skull, no manifestation of cord injury, made a good recovery.

Five cases of less serious fracture, three fractures of one or more lateral process of lumbar vertebra and two fractures through sacral segments, no case had paralysis, all recovered.

Treatment: Upon admission fractures of the spine are made as comfortable as possible. A careful physical examination is made to determine, if possible, the location of the fracture. Roentgenograms are made until we are satisfied that a fracture exists and the location. If there is cord injury to the extent of paralysis we operate as soon as the condition of the patient will allow. The cord is exposed by removal of the spinous processes, lamina fragments of bone and blood clots, making sure that all pressure is removed. It is better to go from one to two vertebra above the lesion. We have not made an effort in any of our cases to suture the cord, in fact we do not open the dura, depending upon palpation and inspection for sub-dural pressure, due to clots. We believe that the risk of infection and subsequent meningitis, due to opening the dura in the presence of so much trauma is greater than the chance of sub-dural pressure, due to hemorrhage. The wound is closed in layers with catgut, one

cigaret drain down to the cord, skin with linen, the patient placed on a firm bed, no cast, frame or other restraining apparatus being used. The patient is placed in the care of an intelligent, energetic nurse, who firmly believes, along with the surgeon, that the patient can be saved. The position is frequently changed, every four hours during the day and every six hours during the night, the back and all paralyzed parts are bathed at each change of position, the legs are not allowed to cross one another and the heels receive careful attention. The bladder and rectum is under constant vigilance. Allow the patient to go twelve hours and if he does not void catheterize under the strictest aseptic precautions. If pus appears in the urine irrigate the bladder, gently, with two per cent solution of hot boric acid. It will do no harm to look into the bladder occassionally with the cystoscope to survey the condition of this viscus. The rectum is kept clean by daily injections of hot soap solution, and frequent digital examinations to make sure that impaction of feces does not occur. Keep the patient and bed dry and fresh. The drain is removed on the sixth to tenth day, the stitches in skin removed when the judgment of the surgeon will permit. If the patient does well he is gotten up at the end of the third to sixth week, his spine stretched on "Cooke frame," see figure, and cast applied from hip to exilla, after which time he is allowed up in rolling chair and in a few days go home to return monthly for inspection and adjustment of cast. If all is well the cast is removed entirely at the end of three to four months.

Under this regime not one of our cases developed decubitus ulcers in the hospital and only one developed them after going home. The longest stay in hospital in this series was sixty days, the shortest twenty-eight days, (this of course includes the cases showing paralysis and operated upon).

If bed sores develop the scene changes and the case becomes more serious, the stay in hospital much prolonged, however, in the most severe type of ulcer the patient's life must not be despaired of. I refer to the case reported by Walter C. G. Kirchner of St. Louis, S. G. O., June 1923, to show what can be done with a case apparently impossible. Keep on keeping on (Riley) and we will eventually make the patient and ourselves happy.

CASES OF LESSER SERIOUS FRACTURE.

It is our opinion that all fractures of the spine above the sacrum, makes no difference how slight, should be treated with the cast until firm union has taken place, hospitalization is seldom necessary in fractures of the spinous or transverse processes, unless other injuries exist. The two cases of fracture through the fourth sacral segment were treated by a well fitting pelvic binder with good results.

In conclusion let me emphasize:

First: A most careful examination of all back injuries, especially roentgenologically.

Second: Laminectomy in all cases of paralysis.

Third: Careful nursing, frequent change of position while patient is confined to bed.

Fourth: Close attention to bladder and rectum.

Fifth: No cast or restraining apparatus until patient is able to be up in rolling chair, then cast applied in sitting position with spine stretched.

Sixth: Require patient to wear cast until firm union has taken place, determined by roentgenogram.

Seventh: Exercise and massage will hasten muscle tone.

LARGE TRAUMATIC ANEURISM OF THE LEFT COMMON CAROTID ARTERY CURED BY TOTAL EXTIRPATION CASE REPORT

J. D. Highsmith, M.D., F.A.C.S.

Surgeon Highsmith Hospital, Fayetteville, N. C.

The mortality in ligations of the common carotid ranges from thirty to forty per cent according to some, and fifty to sixty according to others. That lesion of the vascular walls may often cause aneurism was amply shown during the recent war.

Carotid aneurisms are rare and rules for operative indications are not very adequately found. Methods which risk thrombosis are not applicable in carotid aneurism because of the great dangers consequent upon the occurrence of embolism.

Aneurism of the common carotid artery presents special surgical problems in its treatment.

(1) Loss of consciousness and aphasia may occur due to anemia of the anterior two-thirds of the brain, which is bound to occur immediately after ligation.

(2) With but few if any exceptions aneurism of the common carotid is bound to prove fatal when it is left untreated, as rupture takes place either externally or internally, or death takes place due to anemia in the vital centers of the brain.

(3) As the aneurismal sac enlarges it encroaches upon important structures and pressure symptoms manifest themselves.

(4) Considerable pain is present at the site of the tumor or referred to more distant parts, such as the head, arm or shoulder, paralysis may occur.

(5) Frequently there is loss of vision in the eye on the side of the aneurism and pupillary changes.

In addition to the usual complications of arterial lesions injury to the common carotid artery may also lead to death from grave cerebral involvement. These cerebral manifestations are attributed by some to thrombo embolic factors and by some to cerebral anemia and depend on imperfect development of collateral vessels.

Following an injury or ligation of the carotid artery, the collateral circulation becomes reestablished either through anastomosis between branches of the two external carotids, or through the circle of Willis.

The interference with the formation of a complete collateral circulation depends upon:

1st—The injury itself or ligation of the vessel (lowering of arterial pressure, spastic contraction of the arterial vessels below the seat of the injury or the ligature.)

2nd—Anatomic anomalies particularly affecting the circle of Willis.
3rd—Pathological vascular changes.

There is a distinction between traumatic aneurisms and those aneurisms that are caused by disease of the vascular walls. Matas says that in the young with aneurisms of direct traumatic origin, who are free from syphilis or other constitutional taints you need not hesitate to attack the aneurism by a free incision into the sac followed by suture of all its communicating openings within the sac. But even then you should not attempt such a procedure without the most thorough control of the main or injured artery above and below the sac by preliminary provisional hemostasis with clamps, bands, or temporary elastic ligatures.

In determining upon a method of surgical attack in aneurism of the carotid arteries a study of the efficiency of the collateral circulation is always important, and tests should be made to determine this. The hyperemia reaction or color test. The preliminary occlusion of the main vessel by the use of removable bands, and clinical observation tests, are of value, but are difficult of demonstration in carotid aneurism. When the aneurism develops gradually, there is a tendency for the collateral circulation to adjust itself, just as in the gradual obliteration by the use of bands.

Several methods present themselves for consideration in determining upon a method of surgical attack. Ligation may be performed as a conservative measure. Ligating the artery distal to the sac has not given good results, ligation proximal to the sac, though usually improving the condition is not as a rule curative. The use of metallic bands will permit of varying degrees of occlusion of the vessel. Muscle and facia grafts are used to cause a gradual occlusion of the vessel and are of inestimable value. The metallic bands can if necessary be removed during the first few days following the operation, this restores the cerebral circulation. They may be used as a first stage in a two stage operation for aneurism.

The radical procedures resolve themselves into aneurysmectomy, aneurystotomy and endo aneurysmorrhaphy, the type of operation to be performed depends upon the character of the case. According to the majority of operators the Matas operation of endo aneurysmorrhaphy is to be preferred in the majority of cases as it is simple and more conservative.

For concrete consideration of the subject of aneurism of the left common carotid artery it may serve our purpose to relate briefly the following case:

Case No. 16,561. R. R., Negro, Male, Laborer, Age 37. Admitted to the Highsmith Hospital May 15th, 1926. Operation was performed May 20th, 1926, and he was discharged June 7th, 1926, being retained at that time as an elevator operator in the Highsmith Hospital.

Complaint on Admission: Large pulsating and expansible tumor mass occupying the left side of the neck, severe pain in left arm and shoulder and severe agonizing headache.

Present Illness: In the fall of 1923, two and a half years ago, patient says that he first noticed a small pulsating tumor mass about the size of an English walnut in the left side of his neck, just external to and about one inch below the cricoid cartilage. During the first six months it grew slowly causing him very little dis-

comfort. In the fall of 1924 about one year after he first noticed the pulsating mass it commenced growing very rapidly and soon he was suffering a great deal with pain in the head, arm and shoulder. He almost lost the use of his left arm and had to give up his usual work, but did get a job as sexton of the Presbyterian Church. About this time he consulted us and we advised operation, but patient refused to have it done, when its danger was explained to him. During the year 1925 he grew rapidly worse, so that it was necessary to give him morphine daily. Says that the pain is worse when he lies down, suffers from shortness of breath, giddiness in the head, and has had several attacks in which he lost consciousness. Attributes his trouble to a gun shot wound of the neck which he received Sept. 10, 1921, now about five years ago.

Upon admission to the Hospital is suffering intensely and is taking one grain of morphine daily and with very little relief from pain. Is now willing, in fact anxious, to have an operation.

Past History: Denies ever having had any of the usual childhood diseases. Never had any serious illness. At the age of 19 while popping a wagon whip injured his left eye, so that the eye had to be enucleated, wears a glass eye as a result of this. General health had always been good up until five years ago, when he was shot through the neck by a policeman who was attempting to arrest him for being drunk. I myself was called by the police to see the patient and found him apparently dying, from a pistol bullet wound through the neck. He was brought to the hospital and given an intravenous infusion of saline containing adrenalin, heat externally and stimulating drugs and the usual treatment for shock, he rallied and was conscious the following morning, but had considerable speech difficulty and was suffering with great pain in his left arm, which was partially paralyzed. Remained in the hospital sixteen days, when discharged Sept. 26, 1921, was suffering considerable pain in the right arm and had only about one-fourth normal function in this arm, his speech difficulty was clearing up and there was no sign of an aneurism. He was given treatment for his arm and advised to return for observation.

Social History: Denies ever having had lues. Had gonorrheal infection twenty years ago. Was married in 1908, never had any children.

Family History: Mother died when patient was an infant, cause unknown. Father died suddenly from heart trouble, one brother living and well, one sister living and well, one sister died from heart trouble, suddenly. No family history of malignancy or tuberculosis.

Physical Examination: Reveals an adult colored male fairly well nourished, general condition, facial expression is anxious and shows evidence of intense pain, the left eye is artificial, the pupil of the right eye is normal. In the left side of the neck there is a large pulsating tumor mass, fusiform in shape, occupying almost the entire side of the neck, and extending downwards beneath the clavicle and being limited internally by the trachea, the overlying skin was tense and not freely movable. At the site of the entrance of the bullet it looked as though the mass were about to rupture. The tumor itself was tense and pulsating forcibly and synchronously with the cardiac systole and on auscultation a loud bruit was audible. The left arm is of normal size, but the patient says that he cannot use it due to the intense pain it causes him when he moves it. The right arm shows some atrophy but it is not painful and he can use it freely. The atrophy is probably due to an injury to the Brachial plexus or nerves on that side at the time of

the bullet wound. Heart and lungs normal. Abdomen negative. Extremities, reflexes exaggerated. Blood pressure systolic 130, diastolic 90. Wasserman reaction negative. The urine shows a faint trace of albumin and an occasional granular cast.

Operation: The operation was performed under general ether anesthesia preceded by the administration of morphine sulphate grs. 1/6 with atropin sulphate grs. 1/150 hypodermically. Made a triangular shaped skin incision on the left side, commencing at the angle of the jaw and extending downwards to the supra-sternal notch and from there directly over the clavicle to the shoulder joint. A triangular flap of skin with the platysma was dissected free after ligation of the external jugular vein, to expose the underlying structures. After dividing the sternal and clavicular attachments of the sterno mastoid muscle, the inner one-third of the clavicle was resected together with the upper portion of the manubrium sterni, the remaining portion of the clavicle was reflected outwards, thus exposing the structures beneath. The aneurism extends into the thoracic portion of the common carotid. At this point we encountered considerable bleeding from the subclavian vein, which was controlled with difficulty by means of ligatures. The aneurism sac was now dissected free from surrounding structures, by means of blunt dissection. With the use of deep retractors the common carotid was identified proximal to the sac and freed by means of blunt dissection and was doubly ligated, with an aneurism needle two strands of chromic catgut No. 2 being placed around the artery, leaving a space of about one cm. between the two and tied, approximately one inch from the lower border of the aneurismal sac. All pulsation in the aneurism now ceased. Another ligature was now placed and tied close to the sac, and the artery cut between the ligatures. The distal end of the artery is now isolated, freed and doubly ligated with chromic catgut No. 2 and cut between ligatures. The aneurism sac was then opened, evacuated of its contents and removed.

During the removal of the sac had considerable bleeding from the internal jugular vein, the vein was clamped in an effort to control hemorrhage whereupon the patient immediately ceased breathing and his heart action stopped and the pupil of his remaining eye became dilated. The clamp was hurriedly removed from the vein and in a few seconds the heart action returned, respiration again became normal, and pupil contracted to normal. This phenomena I attribute to the fact that the vagus nerve was caught in the clamp together with the vein. Bleeding was finally controlled by means of ligation, and a small gauze pack which was placed in the lower margin of the incision. Closure of the deep parts with chromic catgut and the skin and silk worm gut followed.

The patient was in a serious condition at the close of the operation, which took two and one-half hours, but was given the usual treatment for shock and rallied. The day following operation his condition was surprisingly good. On the fourth day after operation he had a severe attack with his head and had to be given morphine to relieve the pain. The wound healed except for a small sinus which discharged considerable pus and refused to heal until in September we removed a sequestrium of bone.

Status Presens: The patient is now entirely free from pain, he has returned to his work, has good use of his arms. His blood pressure is normal. Urine negative and there is no signs of a recurrence of the aneurism.

Simultaneous ligation of the arteries proximal and distal to the aneurism followed by excision of the sac or an obliterative endoaneurismorrhaphy would appear to be the best procedure for carotid aneurisms. The restorative and reconstructive operation would have been of little if any value in my case. Intrasacular suture would have been impractical as the aneurismal sac was pouched and ramifying it extending down into the thorax beneath the clavicle.

The case here presented illustrates the necessity of having all the vessels associated with the sac under control and the importance of good exposure. I can see no objections to the removal of a portion of the sternum or clavicle when necessary to obtain the proper visualization of the operative field. This patient has good use of his arms in spite of the fact that a portion of his sternum and clavicle were removed.

Also let me emphasize the importance of strict asepsis and antisepsis as most of the secondary hemorrhages are due to infection. My patient had an infection occurring in the cut end of the clavicle and sternum, and we were fortunate in being able to remove the sequestrium of bone without having to resort to a secondary operation for osteomyelitis.

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DISCUSSION

Dr. E. T. Dickinson, Greenville: I congratulate Dr. Highsmith and sympathize with him in this operation. I especially congratulate him on the great successes he has had and I sympathize with him because I had a case similar to his and know the great difficulty of removing a thing of this kind. My case was one of fibroid change of the thyroid with a tumor between eight and nine pounds, larger than the person's head, in a negro 64 years old. The patient had to carry the tumor in his hand as he walked. He could manage to sit still and let the tumor hang down but on any motion he must support the tumor in his hand. So I realize the trouble Dr. Highsmith had to get to the common carotid artery. However, it is encouraging to think how much operating can be done in this region by taking the necessary time and pains. Doctor, how long were you doing that operation?

Dr. Highsmith: Two and one-half hours.

Dr. Dickinson: I think you did a good two and a half hours work. I am sure I was that long in removing the one I spoke about. You state your patient was 37 years of age. Mine was almost twice that old and I expected a great deal of mental trouble from the ligation of the common

carotid, but recovery proved uneventful. In one week the patient sat up and looked fine.

I think these patients should have the benefit of surgery. Dr. Highsmith's case was a forlorn one, as was mine. The patient stated he would prefer to die rather than live with the tumor. It was only on account of his pleading that I consented to do the operation and I was very much gratified to find that it could be done and the man made well and strong in so short a time as a week or ten days after such a tedious operation.

Dr. J. D. Highsmith, Fayetteville (closing): From the literature I read concerning this condition following the operation I was led to the belief that when these aneurisms develop gradually you can feel pretty safe in ligating the carotid without fear of getting any serious cerebral involvement, due to the fact that the collateral circulation is already developed more or less. This was an interesting case to me. I am sorry I did not have a picture of the patient before the operation.

SECTION ON CHEMISTRY, MATERIA MEDICA AND THERAPEUTICS

This Section was called to order at 2:45 P. M. on April 20, 1927

CHAIRMAN: BEN H. HACKNEY, Lucama.

THE TREATMENT OF COLLOID OR SIMPLE GOITER

By BEN H. HACKNEY, Lucama, N. C.

Over activity or under activity of the thyroid gland usually causes it to enlarge and when it is enlarged we say its owner has goiter. This disease or condition is more prevalent among women than among men. It would seem that in the human economy almost every process is dependent on some other process—every gland on the function of some other gland and that health, physical and mental, depends on the harmonious cooperative working of all the glands. Goiters from a clinical standpoint are of two general kinds—simple and toxic. From a pathological standpoint goiters are classified under four different heads. 1—Colloid goiters. 2—Adenomatous goiter without hyperthyroidism. 3—Adenomatous goiter with hyperthyroidism. 4—Exophthalmic goiter. There is no difference of opinion in the profession as to the treatment of the last three classes of goiters described for in these conditions it includes presurgical and surgical treatment.

Colloid or simple goiters should be treated by medical and hygienic measures unless they produce deformity or cause pressure symptoms.

It is now definitely established that simple goiter is due to an iodine deficiency or a lack of certain chemical elements found mostly in sea water and known in chemistry as halogens. These elements are iodine, chlorine, bromine and fluorine. Of these iodine seems most important to the thyroid. Absence in the diet and in the drinking water of these chemical elements, which the ocean yields abundantly, causes disturbances in the thyroid and probably in other glands.

It has been pointed out by David Marine that hyperplasia of the thyroid gland will not occur until the iodine content of the thyroid gland has fallen below one one-thousandth of the weight of the gland, but as the store of iodine continues to fall below this ratio hyperplasia undergoes a relative increase. In advanced hyperplastic cases little or no iodine is found in the thyroid gland. From his expensive observation on oxen, sheep, pigs, fowls, rabbits, and dogs, Marine concludes that iodine store varies inversely with the degree of active hyperplasia.

The thyroid gland has been called the gland of romance because it sometimes acts like a barometer, varying with the tide of affection and emotion. It is known to be definitely associated with the reproductive function. A woman with goiter, if not treated, may give birth to a mentally defective child. Exhaustive investigation in which Marine and others have employed a large variety of animals the principle of hereditary goiter has been proven beyond the shadow of a doubt. A goitrous mother will transmit hyperplastic thyroid glands to her offspring. Marine cites numerous experiences made with rabbits, dogs, and other animals

demonstrating this principle. Further experience has been carried on to prove that if the mother has been cured previous to the period of gestation, the offspring will be born with normal thyroids. The question as to whether successive generation shall reach complete development or whether increasing numbers are to stop short, as cretins, or myxeodematous invalids, depends upon the iodine balance in the circulation and the ability on the part of the thyroid gland to use it in keeping the endocrine balance of the body.

There are two periods in human development when body growth is exceedingly rapid; these are, the prenatal period and the period of adolescence. In the nine months preceding birth the weight increase is nearly a billion fold. After birth the rate of growth is more gradual until the age of puberty, when a second period of rapid growth begins.

These periods of rapid growth call for increased nourishment and for increased activity on the part of all the glands. If the blood of the mother is deficient in calcium during pregnancy, the child's teeth may be brittle and the bone structure correspondingly poor. In the same manner, if the mother's thyroid gland is deficient in iodine during pregnancy the child may either be born a cretin or it may develop goiter early in life.

Adolescence is the second period of rapid growth. Here again the thyroid gland is taxed to its utmost, especially in girls. Coincident with the special activity due to rapid growth, to the awakening of the emotion or to the bearing of offspring the thyroid gland increases in volume, but if continuously supplied with a minute quantity of iodine, and I believe the most acceptable form of iodine for this purpose is stearodine, which is a combination of stearic acid and iodine. The thyroid faithfully performs its function insuring mental and physical vigor.

The brain is the driving force of man. Whether the brain drives well or poorly depends on the function of at least two glands. These are the adrenals and the thyroid. If the thyroid gland is absent or inactive, the brain is dull and its owner stupid.

If a child is born without a thyroid gland or with a thyroid gland that fails to function, he is called a cretin.

Until within the last thirty years such cases were considered hopeless. Medical science discovered the cause and the cause suggested the remedy. That these otherwise doomed creatures can be rescued from hopeless idiocy is a triumph of experimental medicine unparalleled in its history.

Since it is an established fact that incipient goiter is usually due to deficiency of available iodine in the thyroid gland, the development of hyperplasia in partially thyroidectomized dogs, and the involution of the hyperplasia after feeding these dogs iodine was accomplished in long series of experiments. The ease with which these hyperplastic and hypoplastic states of the thyroid were experimentally alternated has provided convincing evidence that the early administration of iodine will completely offset the tendency to, as well as abort or even involute, hyperplastic colloid or simple goiter.

It is gratifying to be able to state that most of our goiters are simple goiters and the magic word is prevention. The prevention of goiter consists in the giving of a very minute quantity of iodine to the expectant mother during the last three months of pregnancy and in carrying out a

similar treatment among the young girls of goitrous mothers until they reach the age of seventeen or eighteen.

The obvious remedy for the prevention and treatment of simple goiter is iodine in some form and my first choice of the various preparations is stearodine and my second is lugol solution.

While our knowledge of goiter is yet far from perfect the researches of the decade have thrown a flood of light on the problem, and the spectacular results already attained form a most brilliant page in the recent annals of preventive medicine.

BASAL METABOLISM AS A THERAPEUTIC GUIDE

By Hubert B. Haywood, Raleigh.

The term Metabolism is derived from the Greek and means change. It is the biological term for the process of chemical change in a living cell. Basal is an adjective meaning pertaining to or form—the base or fundamental.

Clinically basal metabolism or the basal metabolic rate refers to the heat production of the body measured twelve to eighteen hours after ingestion of food and with the body at complete rest.

The metabolic rate can be determined not only by direct measurement of the heat thrown off by the body but also indirectly by measurement of the oxygen intake, the CO^2 output or both.

Several types of apparatus are on the market and have been so simplified that the technique is easily acquired. Tables have been provided that make it easy to calculate the rate provided the height and weight of the patient are known.

The closed circuit method is commonly used. In this type the patient breathes into a spirometer bell containing oxygen. The gradual descent of the bell as the oxygen is consumed affords the required data for the metabolic rate determination. Some machines are read from a scale and others have a graph which plots out the curve of oxygen consumption.

Soda lime inside of a double enclosed water chamber removes the CO^2 from the expired air and gives a pure oxygen for the patient to breathe. Corrections are made in the readings for temperature, barometric pressure and humidity. The calculation is based on the assumption that a liter of oxygen absorbed by the patient corresponds to 4.825 calories set free. Further mathematical computation is necessary in order to obtain a figure comparable in all individuals and a basis of expression of the metabolic rate as a definite percentage above or below normal.

Errors are commonly due to improper preparation of the patient, namely, lack of proper rest and fourteen to eighteen hours of preliminary fasting. Leaks in the apparatus, improper adjustment of the nose and mouth piece, and infrequent changing of the soda lime are also causes of error.

Deviations of ten to fifteen per cent above or below normal are not incompatible with health. Fluctuations of two to five per cent may occur in the same individual.

Basal metabolism is increased in hyperthyroidism, in the leukemias, in nephritis, asthma, anaemia, hypertension, acromegaly, and in some cardiac diseases, hyperthyroidism giving the greatest increase in rate.

Basal metabolism is probably more useful in helping differentiate hyperthyroidism from other conditions which it may resemble than in any other way. There is a group of patients who have signs and symptoms suggesting exophthalmic goiter but with normal basal metabolism. These patients are described as having a disturbance of the Autonomic System. They include in some cases tachycardia, exophthalmos, goiter, tremor, and the minor symptoms including diarrhoea, sweating, and palpitation. In these patients there is no alteration in basal metabolism and no evidence that there has ever been. Kessel (*Archives of Internal Med.*, Mch. 1923) has applied the term Autonomic Imbalance.

The symptoms of exophthalmic goiter are almost entirely sypathomimetic. In the stage of arrest when the basal metabolism is not elevated it cannot be distinguished from autonomic imbalance.

Kessel and his associates further conclude:

Thyroid enlargement and adenomas of the thyroid may exist for years without at any time causing sypathomimetic symptoms or alterations in metabolism.

Disturbances of the involuntary nervous system clinically occur frequently.

In Autonomic Imbalance. There is no disturbance of metabolism. There is a close relationship between exophthalmic goiter and autonomic imbalance. The latter presages the former and is probably a stage in its development.

The author states that operation does not help the patient with autonomic imbalance but rather makes him worse.

In girls a symmetrical enlargement of the thyroid at the age of puberty may be accompanied by nervous symptoms, tachycardia, and palpitation. A normal metabolic rate assures you that you are dealing with a vascular colloid goiter.

In hyperthyroidism reduction of the metabolic rate by the ingestion of Lugol's solution makes a better operative risk of the patient as clinical improvement in the patient usually follows its use.

Incipient pulmonary tuberculosis is commonly confused with hyperthyroidism in its early stages. The basal metabolic rate is not raised in tuberculosis. R. A. Kocher conducted a series of experiments at Trudeau Sanatorium at Saranac Lake to study the basal metabolism of tubercular patients with the idea of finding a rational feeding basis for them. He reached the conclusion that their caloric requirements when without fever were no greater than those of the normal subject. Rest being the most essential thing in tubercular treatment increasing the food above the basal requirement would put an extra amount of work on the lungs since the rate and depth of respirations would be increased to meet the extra oxygen requirements. He concluded that efforts to bring about a change in body weight should be delayed until the lungs were healed.

Cases of adenoma of the thyroid in which symptoms of hyperthyroidism are not marked can best be diagnosed by basal metabolic studies. Wakenham in the *Journal of Biological Chemistry*, June 1923, discussed

Basal Metabolism and the Menstrual Cycle. He found that there is a distinct fall during or immediately after menstruation and a premenstrual rise. Also that causes that produce too frequent menstruation are likely to be accompanied by high basal metabolism. That causes which delay or suppress menstruation are likely to be accompanied by low basal metabolism.

Basal metabolism studies of premature infants have shown that their heat production is not the same as that of a full term infant and further it remains low for three months. This emphasizes the fact that careful temperature control of premature infants should be carried into the first months of life and not dropped in a couple of weeks. In this present age of getting thin the problem of the obese patient is one that confronts us frequently and demands careful investigation. Metabolic studies are necessary for in the one type the basal metabolism rate may be normal or increased while in the other the rate may be low. The high rate case can easily develop alarming symptoms if thyroid extract is given her in order to help her reduce. The obese patient with a low rate is helped by thyroid extract.

The myxoedema case has a low rate and shows marked improvement rapidly under the administration of thyroid extract.

It is possible to diagnose cretinism in childhood before clinical symptoms appear by basal metabolism.

Talbot and Murray in *The American Journal of Diseases of Children,* March 1923, gave their studies on ten cretins. The most marked improvement was noted in those who had had enough thyroid extract given them to raise their metabolism to the expected metabolism rate for their age.

Hypothyroidism and lowered basal metabolism are seen often after goiter operations in which a considerable portion of the gland has necessarily been removed. Valuable aid is given to the patient by checking on the patient's basal metabolism rate and supplying his deficiency.

May I cite briefly some few illustrative cases.

Case 1: Mrs. J., age 56. Had a considerable gain of weight in the last few years. Obese. Ankles swollen. Low blood pressure. Dyspnoea. Beginning myocardial degeneration. Basal metabolism —12. Improvement marked under dietetic regime and thyroid extract. Basal metabolism several months later showed normal, corresponding with patient's clinical improvement.

Case 2: Nurse, age 30, desired to reduce her weight. She took thyroid extract over a period of several weeks without any medical advice. She became ill and developed a rapid pulse and had a hemorrhage into the thyroid gland. A metabolism test was done on her and showed a rate of plus 36. She acknowledged having taken the thyroid extract. After leaving off the drug her improvement was progressive. Her rate returned to normal.

Case 3: Teacher, age 31. Complaint nervousness for the last six months. Tremor of the hands. No thyroid enlargement. Weight 92 pounds. Pulse 110. Blood pressure 134-70. Basal metabolism was plus 45. Rest was advised and Lugols solution was given. She gained fifteen pounds in three months time and got rid of her tremor and nervous symptoms.

Case 4: School girl, age eighteen. Nervous and with symmetrical enlargement of the thyroid. Basal metabolism was normal. Patient improved under general care without any specific medication.

Case 5: Male, age thirty-eight. Had had an enlargement of the thyroid for several months. No exophthalmos or symptoms suggesting hyperthyroidism. Had an automobile accident and rapidly developed symptoms suggesting exophthalmic goiter. Basal metabolism was plus 40. Operated on successfully. Entire recovery. Several months later he had gained so much weight and felt so sluggish that he thought that he might be suffering from hypothyroidism. His metabolic rate was normal however. So it was a case of overeating and lack of exercise.

Case 7: A patient who felt dizzy and sluggish had put on extra pounds. All of this had followed an operation for toxic goiter. Her rate was minus 15. She improved immediately under thyroid extract. Last week her rate was normal.

Case 8: A young woman with delayed and irregular menstruation. She had already had ovarian therapy without results. Her metabolic rate was minus 15. Thyroid extract corrected this condition in a short time. Her rate is now normal.

Case 9: Several cases of toxic adenomas and exophthalmic goiters were seen in association with surgeons. Their metabolic rates were high. Preparatory to operation they were put on Lugols solution and their rates were reduced, making better operative risks of them.

Subsequent basal metabolic readings on them show that they are not now suffering from hyperthyroidism.

I will not run the risk of boring you by repetition.

The cases could be multiplied and have doubtless occurred in the experience of all of you.

Basal metabolism is a helpful guide in treatment as well as in diagnosis. The work is interesting and the results obtained repay you for the extra work that you have done.

DISCUSSION

Dr. Alfred Blumberg, Oteen, N. C.: I think Dr. Haywood has presented not only a very elucidative paper but a very excellent one and I have only one fault to find. I had hoped he would go into greater details because we can always learn something more.

Basal metabolism is an expression that seems a little bit mystic to some of us because we have so little occasion to use it for it is to a certain extent a technical matter that is not easily carried out. The reason we do not apply it more frequently is perhaps because of the technical difficulties connected with it. Dr. Haywood in describing the technique pointed out that there are several methods by which we can measure the basal metabolism. He also pointed out that we like to use the closed circuit. We do so because the open circuit method is very expensive and only special institutions can apply it. We must take the opportunity of using perhaps the most simple instrument that is available for the reason that technically it is quite difficult to use any other instrument or method. There are, of course, the two methods. The one which Dr. Haywood describes helps the physician to a great extent but is not adequate in all cases. In some cases it doesn't work well for the simple reason that we need more information than we get in the readings. Let me give you an

example: If you have a case of diabetes in which you treat the individual with insulin, you may have beneficial results but they may not be as satisfactory as you would like to have them. The question comes up, why is this? For the very simple reason that there is an imbalance in nutrition which should be measured in order to give the patient the benefit of having the necessary balance just as he should have it. I believe it could be measured by means of basal metabolism if you would take the trouble not only to measure the oxygen but also the carbon dioxide with the possible retention figure, and the end result would be more accurate for the purpose of determining the nitrogen content. We could perhaps adjust it far better by the nutritional necessities than we do at present.

My objection to the oxygen method is this: Let us take the individual who lives in Wilmington, N. C., he would have in a liter of oxygen 16 milligrams, although in some other place he might have only 12 milligrams. The difference there would be approximately 12-13%. We allow a difference in reading of 15 plus or 15 minus in our basal metabolism readings. With the straight oxygen method we start with an error charge that amounts to almost the 15% that is allowed. Where we have a border line case it would not be very advantageous to have such an error take place because it may be misleading.

Dr. Haywood mentioned the question of tuberculosis. Perhaps no one knows more about these tuberculous cases than we do in our hospital. The basal metabolism is not very certain unless there is a great deal of study and effort, clinically as well as technically, to determine the true condition. Dr. Haywood also pointed out the difficulty of respiration that comes in as a source of error. In a conference with Dr. ..... he told me that it was as long as six months before he knew how to inspire in the study of basal metabolism. If it takes a scientist that long it certainly must take the patient sometime. Of course, that work was very painstaking and not the kind that we would be interested in, but in teaching the patient to inspire we have to bring him back repeatedly. It takes sometimes three or four attempts before we can accept the final reading. Those are errors that are very misleading sometimes. I am sure Dr. Haywood had thought of that because he mentioned it in his paper.

One other thing I have seen in our hospital. The doctor in charge of the diabetes work has utilized the curve, that is the consideration of the height and weight, and he tries to figure out what the individual requirements will be. He calculates from this whether the blood sugar amount has increased and attempts to find the number of units of insulin used. I hope Dr. Haywood will have the opportunity in a short time of giving us greater details than he did today.

Dr. W. H. Sprunt, Jr., Winston-Salem: In the rural districts particularly we see a large number of cases of goiter and in some of the county schools we have found a rather high percentage in girls between the ages of ten and sixteen. In treating these, while we realize that the lack of iodine is the basis of the goiter, in the vast majority of them we find not only a lack of iodine but also a history of a chronic tonsilitis or repeated acute attacks. It has been our observation that in quite a few of these you can give the child iodine in any amount without having much effect, whereas if you get the tonsils out and then give them iodine you

get a very rapid response. In some of them we have taken the tonsils out and given thyroxin intravenously. We have only done this where the basal metabolism has been very low and in most of those cases we had almost immediate results. In the majority of them we do not expect to see much effect in less than two or three months but in some we see it in twenty-four hours. Since Plummer came out with his work on iodine in exophthalmic goiter some doctors have differentiated the type of goiter by giving iodine. I think the use of iodine has been abused, especially by the use of iodized salt. Whether there is enough to activate an adenoma or not I think is open to question. The patient will almost invariably give a history of having had a goiter for years and until he began to take iodine had had no trouble, but afterward developed symptoms of hyperthyroidism.

Dr. H. B. Haywood, Jr., Raleigh (closing): I just want to thank the doctor for his very constructive criticism. My work, of course, has been in general practice, and I have used the closed circuit method entirely.

Dr. Ben H. Hackney, Lucama (closing): I did not make it quite plain that the treatment I had been using is stearodine. It is the one that I have been using for three years instead of Lugol solution and I think the results are far better; it is much easier to get the patient to take it, especially if it has to be given over a long period of time.

THE STATE'S PROBLEM WITH EPILEPSY
WHAT HAS BEEN DONE AND WHAT MIGHT BE DONE WITH THE EPILEPTIC

By Dr. Thomas M. Jordan, Raleigh.

Mr. Chairman and Gentlemen of this Section:

I have no apology to offer for what I am about to say. Rather, let me thank the Chairman of this section for giving me an opportunity to talk to you upon the subject covered in part by the title of my paper as printed upon the program. Let me offer one word of explanation however, that I may not be misunderstood, when I express such delight over this opportunity. It is because, during the near half century now that I have, without intermission, been a member of the North Carolina State Medical Society, no fellow, if I remember correctly, has uttered a word or written a sentence in behalf of the epileptic or about epilepsy, and the great task of the state in dealing with it: the task now assigned to me.

There are no doubt good and sufficient reasons why no one has shouldered this undertaking before. First and foremost among them is, no doubt, the fact that there has been and is yet such a dearth of information upon the subject. Further, the inherent feeling of all of us, that knowing so little, and recognizing our helplessness in dealing with so distressing an affliction, that we as yet are unable to give a satisfactory explanation of its pathology; and being thus handicapped, we naturally prefer to be excused.

In this effort of mine, to interest you, and enlist your sympathy, it may bring to mind the case of where a fool rushes in and talks when a

wise man would hold his tongue. Be that so, or not so, I am undertaking to bring to your attention one of the State's real problems, which the state will never be able to handle in part, much less to solve, without the support and direction of the medical profession.

Because so little is known of the cause, prevention and treatment of epilepsy, is not a good reason why we should not discuss it, but on the other hand, because its pathology is yet obscure we should the harder try to turn on the light. It was Dr. W. A. White, who has perhaps more than any other man in our profession yet, shed more light upon the subject of nervous and mental diseases, who said: "that because you do not know all about a subject is not a sufficient reason for refusing to talk about it, since by discussion something may be learned in regard to it, its cause, treatment and management."

In my effort to interest you on this occasion I brought with me today two pictures, which I trust you will examine with me, and center your attention upon as a background for the observation I propose to submit. One of these pictures I have carried since boyhood. The other since my early manhood. The observations submitted are the culmination of experiences during the ripening years of a lifetime of three score years and ten. First picture: I hoed corn with an epileptic, as fine a chap as any I have known through all the long years since then. I never reminisce to my childhood days without a feeling of sorrow for William Monk, because of the restrictions, which he bore so patiently, and which were imposed upon him, only because of his affliction. When we went into the swimming hole, William sat upon the bank. When we climbed for grapes, William waited by the root of the tree, and was content with the bunches some of us handed to him when we returned to the ground. He was visibly hurt and humiliated when denied the scythe and cradle, the year we, his companions, were permitted to step into that high estate of manhood in the harvest field. If permitted to go to church or to social gatherings of any kind, it was always under the surveillance of his companions or tied by his mother's apron strings. Poor fellow! How cruel was epilepsy to so fine a character as William Monk! As age advanced, being deprived of the natural opportunities for development of his physical and mental faculties, his mind and body weakened, and that once fine physique and spirit withered as a plant removed from its source of support and development coddles in the sunshine, and he became a victim of his animal instincts and passions, with resentfulness, due to consciousness of inferiority to others, supervening his actions and reactions, but devoid of that degree of profanity and emotionalism, characteristics, so commonly observed among epileptics *en masse* in institutional work. Such in brief is the picture of my playmate, William Monk.

Another picture is the result of a professional observation of an epileptic. When I began the practice of medicine, I was consulted because I was a new doctor in the community, and the epileptic running true to form in trying any and everything for his spells, however risky, was willing that the new doctor should have a try on him. This gentleman was already a married man about forty years of age with a wife and growing family of some half a dozen children. He was anxious for any information I might possess upon epilepsy and the treatment therefor.

He was not an educated man in letters, but a man of unusual intelligence considering opportunities while growing to manhood. He could scarcely sign his name. But without schooling or means during the years of adversity following on the heels of the Civil War, he courted, loved and joined in wedlock with his lady love, regardless of the attendant obligations resulting from such course. He reared an interesting family. In the meantime acquiring large landed estate, and at the age of fifty was an independent, well-to-do citizen in the county where he lived. He was alert, ever wide awake to his surroundings, and if a bargain showed above the trade horizon his falconized eye was certain to visualize it, and straightway he drove to his goal. He dared epilepsy. He was unconquerable, perhaps because of circumstances; he had never been restricted. He was never retarded in speech or action, but all of his lifetime he had been subject to grand mal seizures, followed by periods of stupor of shorter or longer duration. The last convulsion I ever witnessed in his case was at a public sale while he was in the act of bidding for an article he desired, he was seized. He had none of the personality of the majority of those afflicted with that disorder. He was bright, of a give-and-take disposition, companionable, never evidencing a consciousness of an inferiority complex. He fell one day while plowing in his field with a fit and died in that attack. That is the picture of my patient Jess Tom Forrest.

Following these pictures may I mention some obvious characteristics of epilepsy often unrecorded in the symptomatology of the disease, but which should form a part of its picture no less than cough does of pneumonia. These symptoms however, are to be applied more collectively than individually. Outstanding may be mentioned a profound though often inconsistent religious fervor, unreasonable and passionate love for kindred, home and childhood environs. The never-to-be-satisfied insistent desire to try something, medicinally, surgically or otherwise in the hope of arresting the spells. The dominating, almost at times to self-destruction, consciousness of inferiority to others mentally and physically because of the affliction. The list might be extended, but enough. All of us remember some if not all mentioned, if at all acquainted with the epileptic, and any of them is as much a symptom of the disease as is the convulsive movement of the limbs during a seizure, and for which censure can no more apply, than for the muscular contractions or facial hideousness when a patient falls sprawling to the ground in a fit. *Dealing with such as these constitutes the State's problem with epilepsy.*

WHAT HAS BEEN DONE AND WHAT MIGHT BE DONE FOR THE EPILEPTIC.

Last January seventeen years ago, the State opened as an adjunct to the State Hospital at Raleigh, colonies for male and female white epileptics; providing then for two hundred inmates. This space was soon occupied, and for a long time admissions were only possible when death or probation made a vacancy. Until four years ago, that status remained, the State standing pat as to epilepsy. During the last four years, by improvement, and addition to old buildings, space was provided for two hundred additional beds, with increased kitchen facilities and dining room space, and the necessary increased quarters and accommodations for nurses and attendants to care for an increased population. In less than two years

time all this increased space has been occupied, so that now both colonies are full to capacity again, and, as before, applications must go on file. There is no definite information at present obtainable as to the number of epileptics in the state, but the constant demand for admission from the counties from over the mountains through the coastal plains to the sea, now as urgent as at any time within the last four years, would lead to the belief that there are yet a great many outside in this state; and a safe guess would be, that for every one now in the institution, there are from three to five, who have already or will sooner or later, apply, for there comes a time when almost every epileptic becomes necessarily an institutional charge. There are now on roll in round numbers four hundred. Of this number a very large per cent are mentally ill already in one form or another, as well as epileptic, for it is a fact, that in addition to epilepsy, itself regarded as a form of nervous disorder, will be found among persons suffering with epilepsy all the forms of mental disease, found among those people mentally sick but free from epilepsy; therefore the mixed condition becomes a double liability as a state charge, and one more difficult, as will be readily admitted by any person who has had service with both the insane and the epileptic. As already mentioned, the outstanding characteristics of the epileptic, not entirely bereft of reason, are hypersensitiveness, exaggerated emotionalism and abnormal appetites, indeed the convulsion itself is perhaps the explosion of hyperphysical reactions due possibly to surcharged emotions wanting the control of a sufficiency of will-power. This hypersensitiveness creates a great deal of friction among such patients when segregated and gives the attendant his greatest concern, and requires great patience and diplomacy, more so than the ordinary insane do.

WHAT WE TRY TO DO FOR THEM NOW.

There is no truer aphorism than that old saying, that "an idle brain is the devil's work-shop." This applies as well to the epileptic as to anyone else, therefore, we endeavor to occupy each one at all in a mental condition to do anything with some kind of labor, centering the mind upon something else other than self and the affliction. It will be found that in this course less medicine is required to produce peaceful rest, and prevent seizures, and promote a healthy appetite for food, and a more general normal functioning of vital organs will result than is the case where such course is not pursued.

The proposition cannot be disproved, that physical indolence begets physical atrophy, and just so mentally, and mental deterioration of the epileptic can more certainly be traced to mental indolence, in my opinion, than to any other cause yet promulgated for its explanation. Think of my picture of William Monk. Therefore, the epileptic should be encouraged as much as possible to think, to exercise his mental faculties unrestricted; to act on his own initiative, that the mental centers may be stimulated. He should not be isolated when possible to avoid, or deprived of any social relationship not detrimental to himself: Here recall the picture of Jess Tom Forrest. The two major urges of the human being are those of procreation and possession. In the belief that like begets like, a theory not yet undoubtedly proven, he should be restricted in the propa-

gation of his kind, but he should be permitted, in so far as possible, to exercise to the fullest his mind in the art of procuring and possessing, that as heretofore expressed, his brain being exercised therein, he will not lapse into the deteriorated stage. With this comprehension of the situation, the state is now proceeding with its problem with epilepsy, of course, not yet having attained its hopes and aims. Medicinal and surgical treatment for other diseases, occurring among epileptics is resorted to, and with quite as good success as among any class. For relief and prevention of the convulsion itself, various and sundry remedies have been recommended, but until a better understanding of the pathology of the disorder, no specific can be expected or proven, therefore, while we do not confine ourselves to any one, we use whatever suits the particular case best, and that followed by the least baneful after effects. Great stress is placed upon dieting (all epileptics are over-appetited in all spheres if left to their own capricious dispositions), correction of habits of living and person is stressed; and that such a course brings worthwhile results is evidenced by the numbers who are improved thereby alone; and such patients, who can be encouraged and given a hope of escape from their spells by their own efforts at proper living, are advised to return and remain at home, for the reason that there are more now in the state, so mentally disturbed, that they must be removed from social to custodial care, than the state, as yet, has provided room for, so, those who can be managed at home, must remain outside.

WHAT THE STATE MIGHT DO: EVENTUALLY WILL DO.

It will begin with the epileptic child. No statute now stands against the epileptic child's attendance upon our public school, but because of his disturbance there, due to its affliction, it is as effectively debarred as if by law, therefore, some provision should be made somehow, somewhere for it, that it might have like opportunity to exercise and develop whatever faculties it is possessed of. To deny it such opportunities is only to increase its liabilities upon the state. If education is worth while to the more fortunate, why not more so to the afflicted? If anyone afflicted in body or mind deserves the aid of our state, and no one is now so rash as to deny that proposal, surely the epileptic heads the list, because of all human afflictions to date, that of epilepsy is the most dreadful, therefore, school, colonization and hospitalization should be provided for the epileptic, both for his own good and the good of the community. As an economic proposition, I believe it would be sound policy. I am not unmindful of the great burden our state is already carrying in caring for the mentally afflicted and the end of it is not for us to see either; but permit me to offer a word of advice in passing in regard to the management of all of it. The problem of housing should be such as will give safety to the greatest number, considering always the danger from fire, conveniences, enabling cleanliness and comfort to patients, with the least labor for those in charge, and the minimum cost to taxpayer. Fine, handsome, lavishly furnished buildings mean nothing to patients, who have appreciation only of hunger and cold left. Of course, there are exceptions to all general rules and there will be to this. Plain, nourishing, well prepared, judiciously administered food should prevail.

PREVENTION

To this good hour the State has attempted little at prevention. Indeed except one feeble attempt, which was officered and almost wholly financed by a few philanthropic individuals, there has been nothing done in the way of educating the masses as to the possible prevention of mental disorders. And why not? May I not ask the physicians of North Carolina, because it is their province to answer, if answered as it should be, with a working bureau in our justly boasted State Public Health Department, which but for the physicians of our State, we should never have enjoyed the benefits of as we have, had the same not been sponsored and agitated by the Medical Profession of the State.

This great problem should enlist the best there is in pulpit, press, physicians, and last but by no means least, our wisest statesmen.

To your tents! To your tents, Oh Israel. Let our good offices extend into wider fields of usefulness in public health activities.

DISCUSSION

Dr. G. T. Sikes, Creedmoor: I would like to say just a few words in corroboration of what Dr. Jordan has said. I look upon this subject of epilepsy as being one of the great problems before the people of this State. My heart goes out for the poor epileptic. In more than forty years of practice I have had some of the saddest cases among epileptics. You may find a healthy boy with a physique equal to any man present today who is a hopeless epileptic, a boy that is unable to accomplish anything. Dr. Jordan speaks of the probability of training them in school. My observation of the epileptic is that they are not capable of doing much in school work—really they are not able to attend school. I have in mind one of the finest looking children I have ever seen who had infantile paralysis and after a long struggle succeeded in recovering. She is a fine specimen of young womanhood today, but was left a confirmed epileptic. The poor father and mother have always hoped that something might be done to restore the child to a normal condition, but so far I have never seen one restored. As Dr. Jordan has said they go on from epilepsy to certain other forms of mental sickness or mental incapability, growing worse from year to year, notwithstanding the efforts of the family and the advertisements of certain men. I want to say here the quacks are sending out all sort of nostrums and I have seen families spend a lot of money and accomplish nothing. I feel that the State owes no greater debt to anybody than to its unfortunate epileptics, and I would be glad to see our legislature and our medical societies united in effort to get larger appropriations and endorse some plan by which we might have the epileptics segregated at the expense of the tax payers of North Carolina.

Dr. J. M. Templeton, Cary: I have attended the sessions of this body for many years, almost half a century, and in all that time I believe I have never before heard a plea on the part of the medical men of North Carolina in behalf of this unfortunate class. This paper is of too great importance to allow to pass without some discussion. Dr. Jordan has discussed, in the first place, the most important factor in the problem,

the patient. He has discussed the attendant, and also the taxpayer. Now it is for us to take up those factors and handle them for the benefit of this class of patients and to the glory of our profession. I recall that some fifteen or twenty years ago Dr. Jordan read a paper on tuberculosis, suggesting that certain things be done and I think that had some effect on the people of North Carolina. His ideas were published in the press and that very year, or the next, the legislature passed a law requiring the Board of Health to report cases of tuberculosis. Now I hope this paper will arouse us to the importance of studying this question and of having the State furnish funds to take care of the epileptics and give them a chance before mentality is impaired because otherwise there comes a time when they would have to be treated along the lines we used to treat the tuberculous cases, that is with "opium and lies." If we can reach them early I believe there are many cases that could be restored to health.

Dr. G. H. Macon, Warrenton: It seems to me that it is largely a matter of education. I think the press should publish for the benefit of the public strong articles by men like Dr. Jordan who have studied this condition. We general practitioners know practically nothing at all about it. I would like to make a motion that Dr. Jordan's paper be submitted to the press for publication.

Dr. Ben H. Hackney, Lucama: I wrote to ten medical men in North Carolina last November and asked them the most efficient man in the State to present a paper to this section on epilepsy and all ten of these men without a single exception named Dr. Jordan. That is evidence of the importance of Dr. Jordan's work in the minds of the medical men of North Carolina. I second Dr. Macon's motion that this paper be submitted to the press.

Dr. R. McBrayer, Shelby: I think the paper becomes the property of the State Medical Society and we should ask whether we can turn it over to the newspapers. I am personally in favor of so doing. I would like to amend that motion that, at the request of this section, the author send a copy of the paper to that outstanding statesman, O. Max Gardner, of Shelby, for his information.

The motion as amended was seconded and so ordered.

NOTES ON ALKALOSIS

By Spencer P. Bass, Tarboro

[1]"The blood has a hydrogen-ion concentration less than that of a neutral liquid and is slightly alkaline, the arterial blood being a trifle more alkaline than venous blood owing to the fact that the latter contains more carbon dioxide. The reaction of the blood is kept remarkably constant even under extreme conditions where much acid is added to it from the product of metabolism in the body. If the reaction falls to the neutral point or slightly to the acid side it will be fatal. This constancy in reaction is due in the first place to the protective influence of buffer

[1]Howell's Physiology.

substances in the blood. These buffers are the alkaline salts in the blood; the alkaline carbonates especially sodium bicarbonate, the alkaline phosphates di-potassium and di-sodium phosphate and the alkaline salts of the blood proteins. There is in the blood a large reservoir of alkali which takes care of the acid formed in metabolism and prevents the reaction going too far to the acid side. A definite reaction exists between the free carbonic acid of the blood and its sodium salt. In order to keep the reaction of the plasma constant it is only necessary to reduce or increase the free carbonic acid at the same rate that the bicarbonate content is reduced or increased. Any increase in acidity stimulates the respiratory center and the resulting increase in respiratory movements acts to remove the excess carbon dioxide and thus restores the ratio to its normal value."

In the kidney we have an organ which excretes any excess of acid in the form of acid phosphate. Carbonic acid plus alkaline phosphate enters the kidney, the acid phosphate is excreted in the urine, the blood leaving the kidney carries sodium bicarbonate. This function and the ability of the kidney to manufacture ammonia from urea removes acid from the body and tends to maintain our alkali reserve.

The buffer action of the blood, the respiratory activity, and the kidney are our defenses against acidosis. In alkalosis just as in acidosis there is a change in the carbonic acid-Sodium bicarbonate, ratio in the blood. But the change is in the opposite direction. Such a change may result either from a reduction in carbonic acid or an increase in sodium bicarbonate. Either relative or real.

The carbonic acid may be decreased to the point of alkalosis by over ventilation from any cause such as pain, fright, hysteria, or an irritative brain lesion which will produce prolonged deep breathing. This condition can be produced experimentally and voluntarily in healthy individuals. But the most frequent cause of alkalosis is loss of acid and chloride by prolonged vomiting. Increase in sodium bicarbonate may also result from the administration of too much alkali.

[2]Tests to determine the reaction of the body are as follows:

1st—Urinary Acidity: The urine in acidosis cannot be alkaline. Since the urine in health may be acid such urine may not be proof of acidosis. Brome cresol purple is much more delicate and should be used instead of litmus in taking the reaction of the urine. If the urine is acid the patient may be given 1.0 to 3.0 grams of bicarbonate which in normal cases should render the urine alkaline in from fifteen minutes to one-half hour. In acidosis larger doses are needed. Annuria may prevent this test.

2nd—The carbon dioxide tension of the alvieolar air as measured according to the method of Marriott. Normally the tension is equal to 40 M.M. of mercury. It is often impossible to apply this test in infants and children.

3rd—The carbon dioxide content of the plasma as measured according to the method of Van Slyke. Normally the value is between 50 and 60 as expressed in volumes of .002 per 100 C.C.

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[2]Washington University Laboratory Notes.

4th—The presence of acetone bodies in the urine as shown by the fenic chloride test for aceto acetic acid shows that there may be acidosis of this type, but is not itself proof of acidosis.

There are certain clinical manifestations of disturbed body alkalinity.

Acidosis may be due to acetone bodies as is seen in diabetes and in starvation, in dysentery and accompanying some respiratory infections. It may be due to lactic acid as is usually seen in an-hydraenic infants. It may be due to failure of the kidney to function as in the acidosis of nephritis and it is often due to retention of carbon dioxide in circulatory failure. From whatever cause whether classified or unknown the clinical symptom of air hunger is present. The deep pauseless breathing effort of the body throwing off its excess carbon dioxide.

In alkalosis from whatever cause, loss of acid or too much soda, the breathing is depressed, irregular, a modified Cheyne-Stoke type with frequent prolonged apneac periods. A baby may become blue during one of these periods. There may be tetany usually manifested by general convulsions sometimes by carpopedal spasm.

[3]Hartman's conclusions from his series of cases of vomiting babies, are as follows:

"As a result of vomiting chloride is lost and as chloride diminishes in deficiency in electrolite, so that the total salt concentration still remains the blood bicarbonate is retained and compensates at least in part for the nearly normal. When the loss of sodium chloride in the blood is not fully replaced the non-protein nitrogen becomes elevated to the extent of keeping asmotic pressure normal. When the sodium bicarbonate content of the blood is high there is a depression of respiration sufficient to lead to the accumulation of enough carbon dioxide to maintain an approximately normal ratio of carbonic acid and sodium bicarbonate. But following increased ventilation from any cause the blood becomes abnormally alkaline and manifestations of tetany may appear.

"When the deficiency of sodium chloride in the blood disappears as the result of the administrations of sodium chloride the excess of non-protein nitrogen and sodium bicarbonate in the blood is rapidly excreted by way of the urine. Excretion of sodium bicarbonate, sodium chloride and non-protein nitrogen depend on the total concentration of crystalloid in the blood. When this concentration is less than normal sodium bicarbonate is retained in the blood and the urine remains acid in reaction despite the presence of a great increase in blood carbon dioxide.

"Marked vomiting without actual organic pyloric or high intestinal obstruction may produce identical changes. Loss of gastric or intestinal secretion by way of fistulas results in the same clinical change as does vomiting."

We must either abandon the intravenous administration of sodium bicarbonate in the treatment of acidosis or reserve it for only the gravest cases and use it with great caution. Not only is there danger of producing fatal alkalosis as shown by Marriott and Harland but also it is usually an unnecessary procedure. If the body fluids are restored by the administration of saline or Ringer's solution which also supplies needed

[3]*American Journal Diseases of Children.* July 1926. Hartmann.

salts and if glucose be given and made to burn if need by adding insulin the fatty acids are broken up and the base with which they are combined is released and goes to restore the alkali balance. Soda is unnecessary in the acidosis of diabetes.

An occasional baby may be seen with acidosis of the acetone baby type so profound that the body has not time to mobilize its alkali reserve and in such a case soda may be administered intravenously. At the St. Louis Children's Hospital only one baby has received soda in this way during the past three years. Hartman says that it is never necessary.

Children with pyelitis who are given soda to alkalize the urine should have it given with caution. Salt given parenterally or by mouth will make it possible to keep the urine alkaline with small doses of soda. Children and others with pyloric stenosis should be prepared for operation by subcutaneous saline and intravenous glucose or the hyper ventilation which they get during operation may produce tetany and general convulsions. Gastric tetany of adults is of this type.

A baby of eighteen months had moderate diarrhea. The stools were offensive and there was some distention. The temperature was 102. There was marked hyperpnea, the deep pauseless breathing of acidosis. The urine was acid. The test for aceto acetic acid was positive. The baby received 500 c.c. of Ringer's solution part of which was given subcutaneously as the distention prevented giving much in the peritoneal cavity. He was also given 150 c.c. of ten per cent glucose intravenously. Two hours later the urine was acid, the air hunger had not improved. The baby was too far gone to mobilize his alkali reserve. He was then given 50 c.c. of four per cent solution of soda bicarbonate intravenously and as the soda ran in his breathing rate diminished. With a blood transfusion, repeated saline and glucose, the baby recovered.

A child of 14 months had had persistent vomiting and profuse diarrhea for forty-eight hours and when seen by me was in convulsions. There was carpopedal spasm and marked signs of rickets. Two factors produce this type of tetany: Loss of acid and sodium chloride by vomiting and lowered blood calcium due to rickets. Sodium and potassium are irritants to nerve and muscle tissue. Calcium and magnesium depressors. Magnesium Sulph subcutaneously 0.2 grn. per kilo one and one-half grains per pound was given to control the convulsions while Ringer's solution and glucose were administered. A five per cent solution of calcium chloride 1/10 c.c. per kilo can be given. The calcium does not interfere with the action of magnesium sulphate on nerves and muscles, but does check its action on the respiratory center. This child had depressed breathing and alkaline urine. Chlorides were diminished and this is considered of some diagnostic value by Hartmann. The urine as seen may be acid in these cases because of the retention of bicarbonate, but quickly becomes alkaline when salt is given releasing the bicarbonate. Saline must be kept up in these cases. Milk acidified with HCl instead of lactic acid is the food of choice. It must be remembered that HCl milk may itself cause acidosis if continued too long.

A year old child in the midst of whooping cough had been vomiting about 36 hours when seen by me. The child was in great distress and presented a most exaggerated example of hyperpnea. Its urine was alka-

line and remained so. Chlorides were diminished. Glucose and saline did not modify the breathing. In about two hours after being seen the child had a convulsion and died. This was not acidosis because the urine was alkaline upon repeated examinations of catheter specimens. An irritative brain lesion was responsible for both the vomiting and hyper ventilation.

Vomiting is not a symptom of acidosis, and acidosis is seldom present if vomiting persists.

Let us remember that we must use with caution even so simple and usually harmless a remedy as soda: that when the body receives water to restore the circulation, salt to maintain its electrolite, glucose to burn, the body will usually keep its alkaline reaction within safe limits.

DISCUSSION

Dr. H. B. Haywood, Jr., Raleigh: I saw an old gentleman the other day who had a cystitis following an enlarged prostate. He had been taking bicarbonate of soda over a long period of time and developed very decided symptoms of jerking, etc. This cleared up almost immediately after withdrawing the bicarbonate of soda.

Dr. R. McBrayer, Shelby: This is too good a paper to let go undiscussed. The paper presents a very good idea of modern pharmacology as the young man must learn it and study it in contrast to the old shot-gun prescriptions. I don't see that there is anything so difficult or complex about understanding the chemistry that Dr. Bass has brought out. If we are to employ the use of drugs intelligently; in other words, if we are to treat our patients intelligently, it is absolutely incumbent upon us who have graduated before those things were taught, to learn them now. Undoubtedly oftentimes when patients come to us stating that they have had some kind of a spasm or drawing of the hands or various sensations connected with muscle spasm, this should be borne in mind.

I want to commend the doctor very highly for the presentation of his very timely paper. We forget frequently that an alkalosis is just as dangerous as an acidosis. It is a thing about which we seem to know less and therefore seem to appreciate less and overlook more often. Of course, an acidosis is not literally an acidosis. It is a decrease of the alkalinity or the hydrogen-ion concentration of the blood. We must bear in mind also that a veering of the hydrogen-ion concentration of the blood further to the alkaline side than normal interferes just as much with renal function as does the veering of the hydrogen-ion concentration to the acid side. The blood, if either more toward the acid side or more toward the alkaline side interferes with kidney function and therefore aggravates the very condition we are trying to avoid.

Dr. Carl P. Parker, Seaboard: Acidosis and alkalosis are two things which we as general practitioners do not look after as much as we should. There are many patients, especially babies who during the summer season have colitis, where if we could study the symptoms that appear and keep a tab on the acid and alkaline reaction of the urine, might be saved and I am glad that Dr. Bass has presented such a splendid paper to us.

Dr. N. A. Fox, Guilford College: Reference was made in this paper to the treatment of pyelitis in children and the methods used to bring about alkalinization of the urine. I want to put what I have to say more in the form of a question, and that is regarding the use of citrates as compared to the use of soda. The paper referred to the use of soda in alkalinizing the urine. I would like to ask if the liberal use of citrates is likely to bring about alkalosis as is the case in use of soda.

Dr. Alfred Blumburg, Oteen, N. C.: It is all right to try to discover the acid condition in the child. However, it should not be misleading when the same test is positive in an adult for the reason that an error can occur. The reaction quite frequently is positive. I just merely want to call attention to this fact.

Dr. A. C. Norfleet, Tarboro (closing): I am somewhat at a disadvantage in discussing this paper because I am not as conversant with the chemistry of these things as Dr. Bass. His paper naturally paid more attention to alkalosis in babies. However we often see conditions of this kind in adults. Particularly in cases of partial obstruction in the upper intestinal tract associated with persistent vomiting. One case comes to my mind of partial obstruction in the duodenum, due to ruptured gall bladder with localized and well encapsulated peritonitis. Vomiting had been continuous for some time. This woman had an alkaline urine. She had a plasma CO^2 of around 115, a very low blood chloride and a very high blood urea. A typical picture of the conditions described in Dr. Bass's paper. All these symptoms immediately disappeared upon the administration of sodium chloride (not sodium bicarbonate) together with glucose intravenously. A careful check was kept on this patient, taking a blood chemistry three times a day and we could see a marked change after every intravenous injection. This improvement in blood chemistry was accompanied by an improvement in the patient's symptoms.

As to Dr. Fox's question in regard to citrates, I am unable to answer it intelligently because of my lack of knowledge. However in my opinion an excess of any alkali might result in the condition, particularly as regards children.

MERCUROCHROME-GLUCOSE SOLUTION IN THE TREATMENT OF GONORRHEAL INFECTIONS

By Dr. W. N. Coppridge, Durham

It is difficult to arrive at a true estimate of the morbidity due to the gonococcus. Gonorrhea is undoubtedly the most common infectious disease. It is fair to say that at least sixty per cent of cases have complications of some kind, either in the form of chronic infection in the anterior uretha, or the more serious sequellae occurring in the prostate, seminal vesicles and epididymitis. The treatment of gonorrheal complications is the most discouraging part of a urologist's work, both for him and his patient. The inaccessibility of the parts affected together with the extreme tenacity of the gonococcus and low human resisting powers im-

presses upon us the fact that satisfactory treatment of the disease will probably be based on the principles of chemotherapy.

Young and his associates in 1919 gave us in mercurochrome the most powerful gonococcocide yet produced. Of the hundreds of gonorrheal remedies that have at times been used, mercurochrome is certainly the most penetrating and will kill the gonococcus most quickly. It is relatively non-irritating and is well tolerated by the most highly inflamed surfaces. We have for the past four years used mercurochrome in one per cent solution for office injections in acute gonorrhea as well as for bladder injections, vastotomy injections, and posterior instillations in the chronic cases. We, of course, have used other drugs in the same cases, and for this reason it is impossible to say just what the results would have been with mercurochrome alone, but while no one drug used locally is ideal in the treatment of such cases, mercurochrome is as near this as it is possible for local treatment to be, especially when its use is alternated with such drugs as acriflavin, protogal, potassium permanganate, and silver nitrate.

Young and his co-workers as well as many others have advocated the intravenous use of mercurochrome in septic infections. The concensus of their opinion seems to be that in addition to the direct bactericidal effect of the mercurochrome, the drug stimulates defensive process, in some unknown way, and causes the production of immune bodies and possibly also antitoxins. Young has reported brilliant results by this method in genito urinary infections especially in pyelonephrites. Blood infections of very severe degree has been reported as cured with mercurochrome intravenously. Wright has reported good results with the drug in pneumococcus infections. In spite of the very satisfactory results of others we, at Watts Hospital, have not been able to secure the same results with the drug intravenously in septic cases. Out of possibly twenty-five cases of various infections, mostly septicaemas, in which I have seen the drug given I have not seen any of the cases improve to the extent of leading one to think that mercurochrome had any beneficial action. The technique I am sure was good and the drug was certainly active if reaction to it is any indication of activity. As a whole the use of plain mercurochrome intravenously has been in my experience not satisfactory.

Prompted by the results of Redwell and others as given in their recent article in the *Journal of Urology,* we have used mercurochrome in glucose solution in treating thirty cases of gonorrheal complications. These writers were induced to combine mercurochrome in glucose solution by reports of German and French writers that metallic drugs combined with glucose lost in toxicity and seemed to increase in chemo-immune-therapeutic action. Their results in treating gonorrheal complications with mercurochrome glucose solution were so impressive that we determined to try the method in a series of severe cases.

It is a well established fact that the glucose intravenously has properties similar to any non-specific agent. Injection of sugar solution will produce a negative phase similar to a vaccine. Its action in shock is well known though not entirely understood. Silberstein has shown that there is a distinct increase in opsonins, prothrombin and temporary leucocytosis following glucose injection. Glucose combined with mercurochrome does away, almost entirely, with the reaction seen so regularly in ordinary

mercurochrome injections. We have never employed plain mercurochrome intravenously in the treatment of gonorrheal complications and therefore cannot compare the two methods in this type of case but the mercurochrome glucose solution has given such uniformly good results in severe complications that we wish to report the results in our thirty cases.

Twenty-eight of the cases represented gonorrheal complications of the more than average severity while two of them were cases of non-specific prostatitis which had been rather obstinate in clearing up under ordinary routine treatment. All of the patients were males. Prostatitis was present in all the cases while seven of them had epididymitis and four of these had epididymotomies a few days before the treatment with mercurochrome sugar solution was begun. In every cases the patient showed considerable improvement immediately after the treatment was started. Other treatment of a routine nature was carried out at the same time, such as massage, irrigation, and in a few of the cases dilatation and instillations. The patients in almost every case remarked that their symptoms were much improved after the first few injections and requested that the treatment be continued. Relief of pain and diminution of swelling in the epididymitis cases were constant. Urinary symptoms were relieved and discharge checked in the prostate cases.

An interesting observation was the length of time that mercurochrome could be seen in the urine following the injection. In most cases it was easily seen as late as the third day. Prostatic secretion showed mercurochrome stain several days after intravenous injection. There were only two cases that noticed any action of the drug on the bowel and in these it was very slight and temporary—in contrast to our experience with ordinary mercurochrome injections which have given severe purging for 24-36 hours following the administration. The urine in our thirty cases without exception was stained heavily with mercurochrome for several hours after injections and remained tinted with the solution for several days. In this connection it occurred to us that in the combination of mercurochrome with glucose that the glucose possibly tends to cause more of the dye to be eliminated through the kidney. The diuretic action of glucose is well known and whether or not the glucose tends to carry through with it, so to speak, the mercurochrome we are not prepared to say but from observation it would seem that more mercurochrome comes through in the urine when it is given with glucose than when it is given alone.

The technique we employ is as follows: Using double distilled water a fifty per cent glucose solution is made, filtered and sterilized, then mercurochrome powder is added in proportion of one gram to 100 c.c. of the sugar solution thereby making a one per cent mercurochrome in fifty per cent glucose solution. We have always used a freshly prepared solution not over twenty-four to thirty-six hours old. Redwell, Potter, and Garrison begin with the dose of 10 c.c. and give it three times weekly gradually working up the doses to 20 c.c. They continued treatment until twelve to twenty doses have been given. In our cases we began with five c.c. and worked the dose up to fifteen c.c. and gave the injections every second to third day. In two of our cases there were some symptoms of overaction of mercury after the fourth dose and in these the treatment

was suspended. The largest number of doses we have given any case was nine, the average being about five. Most of the cases are still under treatment. The ideal type of case for the injection—I mean by that the ones that show the most marked improvement—are those with acute complications where there is pain, fever and maliase. We have noted no ill effects from the injections except in two cases, one of which became nauseated and vomited immediately afterwards but was feeling all right in five minutes. The other case was a severe chill three or four hours afterwards but was well the next day. Most of the patients complained of not feeling quite well for a few hours but in nearly every case they were normal the next day. We can report none of our cases as cured under the treatment as some of them are only a few weeks old. The term cured is a dangerous one in any disease and especially is it true of gonorrhea. We seldom use it in reference to our cases. We are interested in this treatment because it seems to be in the direction in which a possible specific remedy may some day be found for gonorrhea. Mercurochrome glucose solution in our hands has certainly caused marked improvement in severe gonorrheal infections. So may we not hope that through careful study of the underlying principles of its action, that some time a remedy may be perfected that will be more or less specific for the gonococcus. As said above we have not used this method except as an adjunct to routine treatment but it seems that in treating severe complications of gonorrhea, mercurochrome glucose solution intravenously offers something of value therapeutically. It is true that we have given only about 160 doses of the drug and less than two months has elapsed since we began its use and our few cases are probably worth little from a statistical standpoint yet they have convinced us that the method is comparatively free from danger and does exert a beneficial effect in the majority of cases.

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DISCUSSION

Dr. Claude B. Squires, Charlotte: Dr. Coppridge has brought to us a subject today that is well worth while and something that has just recently been used. I have never used glucose with mercurochrome, but have used mercurochrome in the treatment of complicated gonorrhea.

This is the first time that I have ever heard a paper on gonorrhea read before the State Medical Society. I do not know why we try to avoid talking about gonorrhea, because it is the most prevalent disease we have now and it seems to be on the increase. Physicians, especially urologists, often try to minimize the importance of venereal disease. The modern urologist has evidently not been taught the fundamental principle to consider his vocation worthy and that it affords a distinct opportunity to serve society. He generally treats gonorrhea, some times talks about its

pathology and treatment in an apologetic manner, but never admits he derives a good part of his income from its management. Dr. Keyes some years ago stated that gonorrhea "rarely persisted in the male urethra for more than a year and never longer than three years." In his recent book he makes this statement, quoting Ricord's famous remark, "a gonorrhea begins and God alone knows when it will end." He adds: "this aphorism is as true today as the day it was uttered."

The treatment of gonorrhea until recently has not been improved on for the last fifteen or twenty years. The old Greeks used every known means to combat gonorrhea. They went so far as to use the powdered excreta of pigeons and other absurd remedies. They used "fomentations" leeches, and numerous kinds of water, as certain acidulated waters, in treatment of gonorrhea.

In regard to intravenous mercurochrome therapy, I think it is one of the best drugs we have at the present time for fighting gonorrheal complications. Uncomplicated gonorrhea, when managed correctly, is usually very easy to treat, but where there is a complication we must use every means at our disposal. I have used mercurochrome, Pregal's iodine solution, salihexin, methenamine and sodium iodide and metaphen intravenously and aolan intradermically and intramuscularly, in chronic gonorrheal complications and believe that each of these drugs has some beneficial effect. I have given over 200 injections of mercurochrome recently in gonorrheal complications and I have always felt that it was the reaction that brought about the good results. The injection is usually followed by chill and elevation of temperature to 102 to 104 degrees. We usually give from twenty to twenty three c.c. per 100 pounds of body weight. Recently we have used smaller doses and have gotten just about the same result. I intend to use now what Dr. Coppridge has suggested in the treatment of gonorrhea.

In the treatment of complicated gonorrhea we have recently used diathermy, but I personally have found it to be of very little value except in relieving pain. Heat unquestionably does good in relieving pain and I have quite often noticed that when a patient develops some acute illness during an attack of gonorrhea he sometimes is cured of the latter infection. That fact, together with the fact that patients who have the highest fever following injections of mercurochrome intravenously, usually improve, makes me believe that the heat kills the gonococcus. A temperature of 102 to 104 degrees over a period of twelve to twenty-four hours usually will kill the gonococcus.

I want to thank Dr. Coppridge for bringing this subject before us and want to assure him that I thoroughly enjoyed what he had to say.

Dr. J. M. Templeton, Cary: I never used mercurochrome until a few years ago but I quite agree with the speaker that it is the reaction that comes in these cases that gives the results. I believe the injection of proteins is the thing that has given me the best results and I use milk for that purpose and get about as good results with it as with anything that I have tried.

Dr. C. O. Abernethy, Raleigh: I do not know much about the treatment of gonorrhea although I have been treating it for twenty years.

I trust in God mostly and hope He will help me out. The truth of the matter is that I have gotten back to the old stage of giving them a fountain syringe and a permanganate solution and trusting the rest to God. Mercurochrome is too red. I have seen it used locally and it looked like a cat had scratched the man. I think it is a very good drug to use when you don't know what else to do. I say that advisedly after having thought it over for many years. I have never used it because Hugh Young has gone crazy over mercurochrome and I don't believe in taking up the notions of crazy people.

I think Dr. Templeton and Dr. Squires are right in saying that if a patient develops heat, goes to bed with a high fever, pneumonia, appendicitis, septicemia, and is let alone he will probably get well of his gonorrhea. When the prostate is involved, I get down on my knees and pray and I declare to you that I believe any man with a prostatic involvement has rarely been cured of it. I have seen them come back years and years afterward and still have pus in the prostatic secretion. You may massage the prostate but you will continue to have pus in it. I think the idea of using mercurochrome when you don't know what else to do may be all right, but I don't think I will try it because if you can get the patient to go to bed I think you will get about the same results with other treatment. I have used milk a good deal and it has proved beneficial. It will relieve pain in acute conditions.

Dr. G. H. Macon, Warrenton: I would like to present the name of a man for Chairman of this Section for next year who has taken an active interest in all of our proceedings—Dr. Carl Parker.

This was seconded and so ordered.

Adjournment at 5 P. M.

SECTION ON PEDIATRICS

CHAIRMAN: DR. SPENCER P. BASS, Tarboro.

REMARKS PRECEDING CHOREA AND RHEUMATIC DISEASE—*Bass*

DR. SPENCER P. BASS, Tarboro: The Chairman is always supposed to inflict on the audience a paper, and I am not an exception.

I was in Baltimore one time and went to see the magician Thurston. There was a woman suspended in mid air, the magician had every one to look at her and finally asked the audience what force it was that kept this woman suspended in mid air, and one little girl held up her hand and said "rheumatism." This is my subject today.

CHOREA AND RHEUMATIC DISEASE

DR. SPENCER P. BASS, Tarboro

The word Rheumatism brings to mind a typical picture. The onset sudden, painful and swollen joint or joints, high fever, prostration, sweating and cardiac disease. In children the symptoms are often quite different. The onset is more gradual, fever seldom high, joints moderately involved and the heart more frequently damaged. Endocarditis, myocarditis, torticollis, muscle and joint pains (often called growing pains) rheumatic nodes, rheumatic purpura chorea and often tonsilitis and nasal infection are forms of rheumatic disease. Its onset may be so insidious as to escape recognition. Rheumatism shows a strong hereditary tendency and a history of rheumatism can usually be obtained from the parents. Poverty and its attendant poor hygiene are predisposing factors.

It is not common before the fifth year, and is most frequent between the ages of seven and fourteen. Its incidence decreases rapidly after puberty. Below the age of three most joint involvement is due to scurvy and most heart disease is not rheumatic. Chorea has been reported in a child of three. Rheumatism is more frequent in females. There is evidence to show that rheumatic disease is slightly infectious. That its cause is an organism or organisms is beyond doubt, but of the many described not one has yet stood the test. The latest of these is the streptococcus cardioarthritidis of Small. His work has been received with skepticism, his proof is apparently insufficient and his claims premature. His organism probably does not differ from that described by many others which have not come up to expectations. Dr. Cabot has for years spoken of rheumatic disease as streptococcosis and it will probably eventually be proven to be caused by strains of streptococci. We must at least receive Small's claim with reservations.

Little is known of the pathology of rheumatism except the pathology of the rheumatic heart. The joints and chorea usually fully recover and few cases come to autopsy in the acute stage. The pathology of chorea,

the form of rheumatic disease with which this discussion is most concerned has not shown constant findings. It is certain that there is no area of encephalitis as in lethargic encephalitis or in polio-myelitis. The brain cells are affected by the rheumatic toxin, but are not destroyed and usually not permanently damaged. The fatal cases of chorea which have been autopsied have shown extensive rheumatic disease in the heart and other parts. Holt and Howland state that 56.7% of patients showing chorea have articular symptoms and if the other manifestations of rheumatism are considered the percentage is much higher.

Generally either the articular symptoms are more pronounced or the symptoms of chorea. Cardiac disease slightly more frequently accompanies the articular form. Various authors estimate that the heart is involved in from thirty-seven to sixty-eight per cent of cases. The frequency of rheumatic heart disease not only in childhood but also in adult life is proof of its destructive nature, but the heart may appear extensively diseased and yet fully recover.

Rheumatic disease is secondary to infection in the tonsils and nasal accessory sinusis.

There is always malnutrition. Patients are not necessarily underweight, but their tissue turgor is poor and they are anaemic. Rheumatic disease is malnutrition plus infection of a particular type.

In those cases which have chorea there is usually a predisposing neurotic factor and bad emotional environment. There is poor emotional control in the older members of the family. The child's nervous system is by heredity and environment made susceptible to the rheumatic toxin. Jews and the Latin races therefore more frequently manifest chorea than more phlegmatic races. Negroes are seldom affected. In negroes the disease is usually of the cardiac articular type.

An attack of chorea usually comes on gradually but the onset can often be traced to some emotional shock, injury, or fright.

The symptoms vary in intensity. The child is often regarded as just a nervous child and receives scolding or punishment for behavior for which he is not responsible. The arms and face are usually first affected, but sometimes the legs are first, and stumbling or the chorea limp may be noticed. The symptoms may not progress beyond the stage of the nervous child, but when fully developed the movements are described by Holt as irregular, jerking, spasmodic, never rhythmical, rarely symmetrical, and vary in intensity from an occasional muscular contraction to almost constant motion. The motion may be confined to one side (hemichorea) and in one half the cases the motion is more pronounced on one side. Some observers contend that in hemi-chorea there are always fine movements on the side apparently unaffected. Fever is not often high and temperature may be normal, yet the fever may be high and delirium acute. The patient may die in this state from exhaustion. Fever is more significant than exaggerated choreac movements. Death is usually due to the accompanying cardiac disease, and toxemia.

The mental condition of chorea patients is one of extreme irritability. There is marked inhibition of control. Choreacs do the best they can, but for fear of doing wrong they often fail in what they attempt. They may be in a state of insanity with no control of body functions, but the patient

is not unconscious or unaware of his surroundings. He remembers happenings about him. This mental condition may continue after the movements cease. Chorea tends to spontaneous recovery in from six to ten weeks, but relapses are frequent. In some cases the duration is longer. Permanent local muscle spasm usually about the face is not infrequent. Persistent abnormal mental behavior is not uncommon.

The diagnosis of chorea usually presents little difficulty. The form of chorea following hemiplegia is usually more athetoid than choreac and yet closely resembles chorea. Rigidity, contractures and increased reflexes are indicative of hemiplegia. The reflexes in chorea are practically normal. The affected muscles are weakened. Habit spasm may be temporarily confusing.

If the patient with chorea holds out his hands with fingers extended the fingers hyper-extend.

If with the patient's hand resting on yours his attention is diverted his fingers tend to separate.

If the child is told to repeat o o o in the same pitch the choreac changes pitch.

With arms to the side and fore arms flexed attempt rapid pronation and supination. The choreac can not do this without also flexing and extending his hands.

The movements of chorea cease during sleep.

The heart should be watched. There is usually a soft systotic murmur which is functional, but a certain number will develop endocarditis or pancarditis. If the apex is extending out and the second sound accentuated, there is heart damage. The heart may fully recover and one should not be too gloomy in prognosis. The treatment of the heart should take precedence over all else and for that rest is best.

Chloral or other hypnotic or opium should not be given routinely for chorea. Drug psychosis and narcotic addicts are easily made without influencing the disease.

Arsenic, though time honored, is not a cure and its effect on chorea is due to the arsenical neuritis which it causes in the large doses recommended. This is certainly undesirable.

Rosenow's serum is no good for the disease and as it causes serum sickness the itching combined with the chorea is most uncomfortable for all. The serum used by Small has not been sufficiently tried but seems to be quite similar to that of Rosenow. Non-specific protein shock is of no benefit. Drugs are not indicated except in exaggerated cases in which magnesium sulphate hypodermically or lumminal sodium may be given over a short period. The salicylates have not yet been condemned, but they are not in high favor.

Removal of tonsils and adenoids should be done, but not in the acute stage. To do this before the body has established some degree of immunity to the infection is quite dangerous. When operated upon too soon choreacdelirium may develop and death ensue. But to remove the tonsils and adenoids is not sufficient. Marriott states that when the focus of infection is confined to the tonsils and adenoids the disease is usually of the cardiac articular form and when in the nasal accessory sinuses they have chorea. Those who have involvement of joints, heart, and

also chorea have tonsils, adenoids and sinus infections. Cases which relapse have had usually an incomplete removal of septic foci in the head. But the infection may be kept up from the heart itself.

Since hearing this statement by Dr. Marriott I have made careful search for sinus infection in all chorea patients and invariably found it, and it is quite frequently present in rheumatic disease of the articular type.

Enlarged cervical glands especially the posterior chain, the blocking of the nose by secretion or hypertrophied mucus membrane or a thin stream of pus down the posterior wall of the pharynex may not always be found and lesser signs have to be considered. With a strong white light and careful and repeated inspection of the nose greenish gray pus will be seen under the middle turbinate or plugs of mucus in the posterior naires. The throat always shows lymphoid hyperplasia on the posterior wall and the salpingo-pharyngeal fold is reddened and thickened. This most common condition should be more frequently recognized.

Radical treatment of sinus infection in choreac children is seldom necessary, but free drainage should be provided.

Choreacs should have absolute bed rest. They should not be kept in darkened rooms, but in sunlight. They need not be isolated, but they should not be made the center of attraction. Their peculiar grimaces and movements should not be commented upon. All physical and mental worries should be removed as much as possible. As chorea is malnutrition plus infection of a particular type, feeding is most essential and the child should have abundant food rich in all food elements and especially in proteins and vitamines.

The regime practiced by Dr. McCulloch is quite successful.

The child is put in the ward with others and food to the limit of his capacity to digest given him. Drugs are withheld except in the exaggerated cases when rest is imperative. The treatment of the heart takes precedence over all else. But even where there is no heart involvement absolute bed rest is insisted upon. The clothes are removed and gradual exposure to the rays of the sun is begun. The treatment is quite similar to the Roleaux treatment of tuberculosis and the results quite as gratifying. The children consume an almost unbelievable amount of food and as their nutrition improves and they become well tanned the infection goes down.

The mental condition is considered with the idea of restoring the confidence of the individual in himself. He is not given a task nor is he allowed to attempt anything until such a time as his efforts are likely to succeed. Usually the patient's first request is to be allowed to feed himself, and he is given food which he is not likely to spill. Encouragement, gentleness, and cheerfulness characterize his surroundings. The degree of physical activity allowed during a convalescence is determined by the condition of the heart. When the child has gained some weight and in other ways shows resistance to the infection, removal of septic foci in the throat and nose is begun. Palliative treatment of local condition before operation is confined to nasal douching with ten per cent glucose solution or normal salt, or the instillation of a weak solution of mercurochrome. This is not done if the patient strongly objects. Several

operations may be required before the infection is removed. Some cases do not improve until operation is done and it may be necessary to operate before the ideal time but operation should not be attempted early in the disease.

Under this plan the percentage of relapses is reduced.

A modification of this treatment can often be followed in the home, but regardless of domestic conditions food in proper quantity, sunlight, and removal of septic foci should be standard treatment in all cases.

ULTRA VIOLET THERAPY IN PEDIATRICS

By Dr. B. W. Roberts, Durham.

There has been in the past two or three years unusual interest in ultra violet therapy due perhaps to the fact that we now can check the results of this treatment by methods of precision such as the X-ray and bio-chemical methods. A great mass of fundamental research has been done and our knowledge has accordingly been increased. It has been determined that the rays which possess the curative and healing influence are found in that portion of the sun's spectrum, which includes the ultra violet portion.

These ultra violet rays have a wave-length of 200 to 390 (uu) millimicrons—the shorter wave-lengths from 200 to 300 are known as far ultra violet rays while those from 300 to 390 are known as near ultra violet rays and the latter are roughly the rays found in the sun spectrum. The short waves are much more germicidal while the longer waves found in the sun spectrum are more stimulating.

It has been determined that more ultra violet comes through about the noon hour, and heliotherapy is best resorted to at this time of the day. Longitude also affects the amount of these waves as also do the seasons. In summer sunlight has more curative power than in winter because more ultra violet rays come through the atmosphere.

Of the many sources of ultra violet light it has been rather definitely shown that the mercury vapor quartz light is our most efficient means of getting the ultra violet rays, being approximately four times as efficient as the sun spectrum.

Mercury vapor quartz light machines are manufactured in two types, the air cooled and the water cooled. The water cooled lamp not being so hot can be placed nearer the surface of the body, and in this way advantage is taken of a shorter and more germicidal near ultra violet wave length.

For routine work the light should be placed eighteen to twenty-four inches from the surface of the body, and exposure made both front and back, beginning with a one minute exposure and increasing one minute daily until ten or fifteen minutes daily exposure is obtained.

The optimum effect is obtained when there is produced an erythema just short of a burn—blondes can stand less exposure than brunettes, and negro babies can take and require massive exposure.

How the rays produce their effect, and what is this effect, are pertinent questions. There is a local and general action; under the local action the rays show a decided germicidal and stimulating effect, slow

healing and infected surgical wounds are sterilized and stimulated to heal. I have seen this effect very well established in the treatment of draining and slow healing mastoid wounds.

Erysipelas responds to this treatment very well. The treatment should be as vigorous as possible. Two exposures daily, and the light as near the surface of the body as possible, so as to utilize the more potent short wave lengths, which have a more germicidal effect but do not penetrate so well.

Many skin infections respond to ultra violet therapy very well. Impetigo-contagiosa and ecthyma being especially benefited. A long list of other localized infections might be named.

Under the general action obtained when exposure of the whole skin surface of the body is resorted to there are found profound changes in the chemistry of the body.

There is an alteration of the cholesterol found in the body. It might be noted also that cholesterol irradiated with ultra violet rays outside the body is seen to have a physical change and feeding experiments have shown this irradiated cholesterol to have acquired antirachitic qualities.

Calcium and phosphorus metabolism is altered; for example in active rickets where the serum calcium may be say, five milligrams per 100 c.c. blood serum and the phosphorus, say 4 milligrams per 100 c.c. blood serum, with two to four weeks of ultra violet exposure these values are invariably seen to approach the normal values of roughly ten and one-half milligrams calcium per 100 c.c. blood serum and roughly four and one-half milligrams phosphorus per 100 c.c. blood serum.

It has been thought that the calcium and phosphorus are not deposited in the bones on account of the fact that they are in too small concentration in the blood serum, but the blood will not show an increase in these low calcium and phosphorus values even though there is an excess of calcium and phosphorus in the diet until we use either ultra violet light, irradiated foods or fat soluble vitamin A.

It has been very definitely shown that ultra violet light influences the absorption of calcium and phosphorus from the intestines and does not mobilize these chemicals in the blood stream at the expense of other tissues of the body; however, calcium or phosphorus alone may approach normal value in rickets and still no calcium be laid down in the bony structures, unless ultra violet light or vitamins be resorted to.

E. A. Parks of New Haven, Conn., thinks differently from the foregoing conclusion. He says radium energy and cod liver oil can in no sense be said to influence calcium and phosphorus metabolism but that these are only changes that we can see and are evidences that the body as a whole has been released from a load and is functioning properly.

It might be interesting here to mention a case of rickets recently seen in the city clinics. A. W., male infant, 16 months old, born in Philadelpha, moved to Durham at 13 months of age, presenting the classical signs of rickets, frontal-bosses, craniotabes, enlarged abdomen, beading of the ribs, and epiphyseal enlargement of the long bones. This infant had been nursed on the mother's breast until the sixteenth month and had been fed the usual adult table diet. When first seen on March 28, 1927, the diet was corrected and daily ultra violet exposure commenced. The

infant has had twelve ultra violet exposures. The X-ray picture taken at the beginning of the treatment shows all evidences of active rickets, widening of the extremity of the bone, a ragged edge, and the absence of calcification. The second X-ray plate taken two weeks later on April 11, 1927, shows definite evidence of calcification and healing. The wide band of calcification is easily noted in the second picture. This infant had no cod liver oil, but cod liver oil would have produced the same results. I am sorry I cannot furnish calcium and phosphorus determinations on the blood serum in this case. I am sure they would be equally as striking as the X-ray.

Ultra violet light is widely employed in the treatment of malnutrition in infants. After a few exposures with a corrected diet the tissues are noted to become more firm. Tissue turgor is increased. The skin begins to tan and take on a more healthy appearance; however it may be noted that the tan acquired from the mercury vapor quartz lights is somewhat different from that acquired in heliotherapy. Perhaps the other spectra in the sun spectrum influence this tanning.

In tuberculosis ultra violet therapy in the form of heliotherapy has widely known beneficial effect. Roller's clinic in the Alps has definitely proved the value of this therapy in tuberculosis.

Here I would like to give the report of a case of scrofula:

V. A., boy, age two and one-half years, brought to office December 31, 1926. History of enlarged cervical glands on left side in anterior and posterior triangle. Enlargement has been noted for over twelve months and had been slowly progressive. There was a history of the boy for some months being fed on raw milk from an untested herd. The glands were mostly confluent and near the point of rupture. There was an afternoon temperature. The boy was up to normal weight but there had been evidently some recent loss in weight. The skin being very flabby and of poor color. The intradermal tuberculin test proved positive, using one milligram tuberculin. He reacted with an indurated, hyperemic area about two and one-half cm. in diameter, subsequent tuberculin intradermal test confirmed the former. In three and one-half months with ultra violet therapy the glands have decreased in size at least half they were to begin with, about the size of a shelled walnut, his color has improved; tissue turgor has been regained, and he has gained three pounds in weight.

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DISCUSSION

Dr. J. F. Foster, Sanford, Mr. Chairman: Ultra violet radiation is still in its infancy but is already one of the chief therapeutic agents of the pediatrician.

It is considered a specific in rickets and tetany, being combined with cod liver oil in treating rickets.

Ultra violet therapy is also of considerable value in treating tuberculosis of the glandular and osseous systems and certain diseases of the skin, those which are most benefited by ultra violet radiation being, tuberculosis, impetigo, pityriasis and some forms of eczema.

I wish I knew more about the subject.

Dr. L. W. Elias, Asheville: This seems to me to deserve a large amount of discussion because the paper has emphasized rickets and some skin diseases. Too, the general condition of the patient should be spoken of and the vast amount of good that can be done by putting the child under the influence of the sunshine or ultra violet lamp. The sunshine also has the benefit of putting the child in the fresh air. There are also one or two other things: the general effect of this on the whole system, in speaking of any particular disease, the effect of bringing the child to a normal condition. There are theories, I am speaking of theory at the present, as to the effect of ultra violet ray being worked out. Of course the calcium in the blood is absolutely necessary in the case of hemorrhage, etc. The theory is the body takes care of itself, the blood takes care of itself to keep from bleeding to death. If the child has had his calcium reduced by influenza, measles, etc., some of the calcium from the teeth will be stolen and he will so protect himself from hemorrhage. We should care for the teeth, when they are ready to erupt, it seems if we are careful on this point after any serious illness to see that the child has proper exposure to the sun or lamp we may build up a set of children with far better teeth, as well as keep them in better condition. If we see the progress that is being done and the amount of attention given to the food it is well to call attention to the enormous advantage by the simple measure of putting the child in the fresh air and sunshine after disease of any sort.

ACUTE MASTOIDITIS IN INFANCY

By T. M. Watson, M.D., Wilmington, N. C.

The diligent search for and elimination of hidden foci of infection has cleared up many pediatric problems during the past three years. It is destined to be responsible for the greatest advance that has been known in the study and treatment of children. We must all grasp this opportunity for improvement and go into it with all our might. A multitude of babies die every day because we doctors fail to find the cause of their trouble. Many a hidden focus has taken the life of the patient while we stood by, treating symptoms, and waited for nature to overcome the infection. Such patients could have been saved had we sought diligently enough and cleared out the breeding point of the bacteria responsible for the trouble. A multitude of the cases of acute diarrhea, which in the past

have been called dysentery, in spite of the fact that repeated studies of the stools have failed to give any specific organism, could have been relieved speedily, had we sought out and eliminated the focus of infection. Numerous cases of secondary anaemia and malnutrition, for which no cause has been determined, can be explained in the same way.

Mastoiditis in infants and young children has been discussed considerably before this section at the last two meetings. The question is of such importance, however, we should not tire of it, but continue discussing, studying, and repeating, until we are able to find or definitely rule out a focus of infection in every case that we examine. Another thing that we must work out is a plan by which we can convince the otologist that surgery is indicated. Many babies are well today, who would almost surely have died, had they received the treatment that we were giving such cases two years ago. The pediatrician and otologist must work together, and wake up to the fact that there is such a thing as a "pediatric mastoid." A large number of the men of this section have been convinced that these cases require early surgery. There are a few otologists in North Carolina who are draining them on time, but I am afraid the majority are holding on to the antiquated expectant treatment.

The etiology of mastoiditis in children is that of the common cold. This includes inferior living conditions, poor ventilation, improper clothing and feeding. All of this leads to a condition of malnutrition in which the resistance to infection of any kind is lowered. Exposure to a case of naso-pharyngitis is responsible for the sowing of the seed. In babies under one year of age, there is some degree of otitis media in more than fifty per cent (50%) of those who have acute naso-pharyngial infection. In these babies the auditus is so small, it takes very little edema and swelling to close the opening. When this is closed, organisms and pus which have invaded the mastoid antrum from the middle ear are shut up, so that drainage is impossible. Granulations form speedily and make a permanent obstruction to drainage. Where the outlet for collected pus has been closed, the natural result is some degree of toxaemia and the pus absorption syndrome. Almost any organism that occurs in the nasopharynx may be the cause of the infection. Haemolytic streptococcus is the most frequent organism found. Staphylococcus, diplococcus catarrhalis, influenza bacillus, colon bacillus may be the causative organism.

In most cases where virulent organisms are active in the mastoid antrum, and the drainage into the middle ear has been cut off, the following local signs are present. The drum, if not open, is dull and bulging. In most of the cases when they are seen by the pediatrist or otologist, however, the drum has either been incised or has ruptured spontaneously. The drum appears thick and granular. The amount of discharge is variable, but in the case showing acute symptoms, this is usually scanty. I do not think the amount or character of the discharge has very much to do with the diagnosis, in the presence of marked general symptoms. The posterior superior canal wall often shows a degree of sagging. There may be just enough of edema to show when closely examined with the otoscope, or it may be so marked as to completely obstruct the canal. There is frequently a case with mastoid antra full of virulent bacteria and pus, causing violent toxaemia, and still showing absolutely no local signs

on which a diagnosis can be made. This has been called the "pediatric mastoid." Here the diagnosis must be made entirely on elimination of other foci.

In the group caused by the haemolytic streptococcus, the patient rarely lives long enough to show textbook signs of mastoiditis (swelling behind the ear, ear pushed forward, obliteration of crease, etc.) These are occasionally seen in cases due to infection by other organisms. The general symptoms are usually more marked than the local ear signs. In the most common type, that caused by the H. streptococcus, the symptoms correspond to those formerly described under cholera infantum. In the severe infection, there is usually fever, from the outset, varying from 102 degrees to 106 degrees F. There is marked dehydration with rapid weight loss. These patients often lose from one to three pounds in a 24-hour period. The body cells do not seem to be able to retain the fluid when it is given, and the patient usually shows increasing anhydraemia even though large amounts of fluid are given every few hours. There is (in most cases) diarrhea from the beginning of the acute symptoms, the number of stools varying from five to thirty-five in twenty-four hours These are watery, greenish yellow, and contain a large amount of white, stringy mucous. The stools occasionally contain some blood. There is severe tenesmus. All signs of profound intoxication are present. The patient is usually stuporous and there may be profound coma. The skin is pale, pasty, gray, and without elasticity. Vomiting is a most common symptom, making it impossible to combat the anhydraemia by administering fluids by mouth. The W. B. C. is high, varying from 18,000 to 40,000. There may be acidosis or alkalosis, but acidosis is the rule. The urine is scanty, highly colored, with some albumen and acetone, and occasionally some pus and granular casts.

The other type of infection caused by invasion of the mastoid antra by staphylococcus, diplococcus intracellularis, pneumococcus, colon bacillus, etc., usually gives a less violent syndrome. Here there is lower temperature, no diarrhea, and gradual but steady loss of weight. Vomiting is less frequent, and marked anhydraemia is rare. The W. B. C. is lower than in the streptococcus case. The urine shows occasional pus cells, and in the more toxic cases, albumen and granular casts. In the average case, however, the urine is clear. These are the cases that hang on for months, who have the feedings changed from time to time, getting everything in the category from lactic acid milk to bone set tea, via Eagle brand, and finally die of "weak stomach."

The cases caused by infection with the haemolytic streptococcus give an alarmingly high mortality unless early surgical drainage is practiced. Without drainage, both syndromes usually lead to Abraham's bosom. The first group rides on the express train and dies in a wreck; the second on the local, without a diner, slowly but surely starving to death.

THE TREATMENT IS DRAINAGE PLUS FOOD AND FLUIDS

The food must fulfill the caloric requirement of the baby if well. The average baby will take care of breast or whole lactic milk just as well as it will skimmed milk or barley water. Where the patient is very

toxic, it is best immediately to give a transfusion, also a generous supply of intraperitoneal saline or Ringer's solution. Intravenous glucose and intraperitoneal saline should be given throughout the course until the anhydraemia is corrected. If the severe toxic symptoms are absent, the transfusion may not be necessary, although it is always in order, increasing resistance in the acute stage and making convalescence more certain and rapid. If the blood is not given, it is well to give intravenous glucose just before the operation. As soon as this supportive treatment has been given, mastoidectomy should be performed under local anesthesia. In the baby under six months of age, Marriott and Alden recommend simply taking off the wall of the antrum, putting in a drain, and getting out as quickly as possible. They feel that opening up the raw surfaces by thorough curretage is responsible for the higher mortality that we have noted. This conservative course may occasionally require a secondary operation, but the lowered mortality seems to make it the course of choice.

It is remarkable how rapidly the symptoms clear after drainage of the focus. In most of the cases the anhydraemic tendency is relieved within twenty-four hours. The body cells, which before the operation were unable to retain fluid, take care of it normally within a remarkably short time after drainage is established. The vomiting usually checks almost immediately. The number of stools is reduced and their character improved. The temperature comes down steadily, a little lower each day, and reaches normal by the fifth to the eighth day, provided there is no obstruction to drainage. If the drainage is imperfect, there will be varying degrees of fever until the focus is eliminated, either by spontaneous rupture of the pus pocket or by secondary operation. If there is continued fever as long as ten days after the operation, the wound should be explored. Most of these babies get well if the wound is kept open by frequent dressing, and the food and fluids properly looked after. In the cases with milder degree of infection described in the second group, the reaction to operation is not quite so spectacular as in the acute streptococcus type, but improvement begins at once. They take any good infant food and gain. Those who have been losing weight on an ideal formula before the operation, begin to smile and grow fat on the same formula after the focus has been drained.

I will now give abstracts of a few cases illustrating this type of infection, and the treatment outlined above.

Case 1. J. R., age 22 months. F. H. negative—P. H. negative—P. I. Chronic discharging ear for one month following acute naso-pharyngitis. No discharge for one week. Symptoms of absorption for one week before coming to hospital; temperature from 101 degrees to 105 degrees daily; vomiting large part of feedings; evidence of severe pain; ten to fifteen green watery stools per day. Ear drums incised three days before admission to hospital. Physical examination on admission: Baby profoundly toxic, moderate anhydraemia, restless, showing evidence of pain. Right and left ear drums open, thick, show a small amount of serous exudate, but no thick pus. The posterior canal walls were very red and sagging markedly. The anterior and posterior cervical glands were enlarged and tender. Lungs had occasional moist rale, but no consolidation (confirmed by X-ray). Examination otherwise negative.

Laboratory Findings: W. B. C. 18,000, Polys 80%. Urine acid, albumin trace. Sugar negative. Micro pus++ Blood culture negative.

Treatment: On admission 200 c.c. glucose intravenously. 500 c.c. saline intraperitoneally. Simple mastoidectomy under local anesthesia. Antra contained thin pus under pressure, and much granulation tissue. Culture from each side gave pure culture haemolytic streptococcus. There was no post-operative shock; no vomiting after the day of operation. The peak of temperature first day post-operative was 103 degrees. The peak was lower each day, reaching normal on the fifth day after operation. The weight gain was satisfactory.

Case 2. J. B., age 1 year. F. H. negative—P. H. Bad feeding, otherwise negative. P. I. Slight cold three weeks ago. Both ears began draining on third day of illness. After this temperature normal for seven days. For eight days before coming to hospital there had been daily rise of temperature. Vomited most of feeding for four days, retaining practically nothing for forty-eight hours before admission. Physical examination: Poorly nourished, rachitic, anhydraemic, profoundly toxic, strong odor of acetone on breath. The temperature 101 degrees. Pulse very rapid, but regular. Both ear drums open. Small amount of serous drainage. Both posterior canal walls very red, but showed no definite sagging. Lungs negative (physical and X-ray).

Laboratory Findings on Admission: W. B. C. 20,000, Polys 85%, Hgb. 45%, R. B. C. 3,000,000. Blood culture negative, urine acid, albumin +, sugar negative, acetone ++, Micro. negative.

The ear men, who saw the case with us agreed to open the mastoids, but we all thought it best to institute general measures first to make it a better operative risk. A transfusion, daily glucose and saline and sufficient food were given. For three days condition improved markedly, then signs of meningitis appeared. Culture of blood and spinal fluid gave heavy growth of haemolytic streptococcus. At autopsy, the mastoid antra were found full of pus, a culture of which gave a pure culture of haemolytic streptococcus.

Early operation would have saved this case. This was one of our first recognized cases. We learned the lesson that it is not safe to wait after the focus has been definitely located. We decided that the safest plan was to give every possible boost (blood and fluids) and operate at the earliest possible moment.

Case 3: D., age 7 months. F. H. negative—P. H. and P. I. Birth normal, weighed 6½ pounds. Breast fed four months, gaining at rate of two pounds a month, weighing 14 pounds at four months old. At that time had acute naso-pharyngitis. Ears: Drums ruptured spontaneously, and drained freely for one week; small amount of drainage for two weeks after clearing of cold. After that time no trouble with ears. Has had occasional "head" cold, but no other illness. Nursed breast well, and took every food offered, but lost weight consistently. Every infant food tried, but none of them seemed to agree. Had fever occasionally. Stools, as a rule, constipated.

Physical Examination: Weight 7 pounds (½ pound more than at birth). A living skeleton. Rachitic. No anhydraemia. Temperature 99. Nose and throat negative. Ears showed drums intact, glistening, with no signs of pressure. Canal walls showed no redness or sagging. Physical examination otherwise negative. Von Pirquet and intradermal tuberculin, Wassermann. Blood culture, negative. W. B. C. 16,000, Polys 70%. Urine, negative.

Operation: Simple mastoidectomy under local anesthesia. Both mastoid antra full of white creamy pus, and granulations. Culture of staphylococcus albus.

Results: Took and retained lactic acid milk—Karo formula—perfectly. Temperature normal after operation for six days. In that time gained a pound and six ounces. On seventh day developed an acute cold, and died of broncho-pneumonia.

This baby died from intercurrent infection contracted after operation, and not from mastoiditis.

Case 4: H. H., age 8 months. F. H. and P. H. negative. P. I. Influenza three weeks before coming to the hospital. R. and L. otitis media at end of first week. Right drum ruptured, left incised. Drained for seven days, then stopped completely, although both drums were wide open. Following this, high fever, severe pain, anhydraemia, all signs of toxaemia. Vomited all food and water for twenty-four hours before coming to hospital. Sixteen watery stools on day of admission.

Physical Examination: The same findings as in Case 1, only here the anhydraemia was extreme, and there was no cervical adenitis.

Laboratory Findings: W. B. C. 54,000, Polys 90%. Urine acid; albumin +, sugar —, acetone ++, Micro. occasional granular cast. Blood culture negative.

Treatment: On admission 150 c.c. of blood I. V. and 500 c.c. of saline I. P. Mastoid antra opened under local anaesthesia. Both cavities full of thin white pus and granulation tissue. Culture haemolytic streptococcus.

Results: Vomited only once after operation. Fever peak on day after operation 101 degrees. Temperature reached normal on sixth day after operation. There was no return of anhydraemia. W. B. C. on discharge 11,000. Discharged in good condition.

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DISCUSSION

Dr. Marion Y. Keith, Greensboro: I would like to say that often a diarrhea is treated for the primary disease when it is only a symptom of hidden infection. In the presence of a diarrhea with fever and when other sources of infection are ruled out, the ears and mastoid should next be considered. Oftentimes on examination of the ears, you will find a drum that is not red or bulging, is of a dull grey color. Paracentisis reveals pus in most every case. The clinical picture of the child must be considered.

Dr. J. Buren Sidbury, Wilmington: The above chart shows the cases operated upon with the laboratory findings in each. These cultures

were taken from the mastoid antra at the time of operation. Each one of these cases showed the presence of pus. The results obtained in these cases have been most gratifying for they responded well to treatment.

SUMMARY OF CASES

Hemolytic Strep.	23
Non-Hemolytic Strep.	7
Staph.	13
Hem. Strep. and Staph.	3
Pneumococcus	1
No Growth	1
Local Anesthetic	40
General Anesthetic	8
Double Mastoid Operation	36
Single Mastoid Operation	7
Right and Left on Different Dates	5
Died	11

CONGENITAL CYSTS OF THE NECK IN CHILDREN

By R. L. Payne, M.D., F.A.C.S.

Surgeon St. Vincent's Hospital, Norfolk, Virginia.

The fascinating side of neck cysts in children is their embryological origin and one cannot grasp the significance of these lesions unless a study is made of the foetal anatomy. These cysts are always surgical conditions and their cure is entirely dependent on a complete knowledge of the embryonal structures from which they are derived. There are six distinct and separate types of neck cysts, but the parasitic, the inclusion dermoid and thyroid cysts are so rare in children that it does not seem practical at this time to consider in detail any except the hygroma, the thyro-glossal and the branchial type.

HYGROMA

This type is often spoken of as a lymphocele and is always of lymphatic origin, arising from the jugular sinus, a foetal bud developing about the third month of the embryonal life. Lymphatic development begins at about the sixth week and the jugular and subclavian lymph sacs are well developed in a 30 m.m. embryo. They are found lying between the primitive jugular and subclavian veins and connect directly with these structures. In the ordinary course of events these embryonal structures become obliterated by the growth of reticulated connective tissue and the formation of lymph follicles and gland nodes, both taking their origin from the endothelium lining the primary sacs.

Sometimes structural faults occur in the developing embryo which result in a failure to obliterate all or a part of the jugular and subclavian lymp sacs and these remain to develop after birth into cystic tumors of the neck.

The jugular sinus extends from the base of the skull at the jugular foramen downward to the subclavian vicinity under the clavicle. Thus is explained the location of this tumor at any point from near the styloid process to the axillary space. Usually they are found in the lowest part of the posterior triangle and strangely are more common on the right side of the neck. I have never seen but one case on the left side and find one other reported by Lyle.

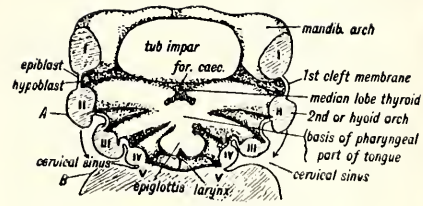
In children these cystic growths show as a soft, spongy tumor. They begin as a small mass remaining quiescent for months or years and then suddenly take on a rapid growth. A common history is that of trauma, followed by an immediate and rapid enlargement of the mass, while infection and toxic absorption incident to the acute diseases of childhood is a very common exciting factor to sudden and increased growth. Thompson thinks this is due to an increased secretion of lymph from the endothelial cells and secondly to a diminished permeability whereby the secretion is ordinarily absorbed in the surrounding tissues. The clinical aspect is that of a painless, slowly growing tumor, soft and semi-fluctuating in consistence, skin movable over growth but growth not movable on the underlying tissues (Winslow). With trauma or infection there follows a rapid increase in size. I once saw one of these begin to grow fast from infection following a diagnostic puncture by the attending physician. Needle puncture, under sterile precautions, is a valuable help in diagnosis but the needle should not be thrust into but one area lest the trauma of puncture in numerous places serve to stimulate a rapid increase in the tumor growth.

When the cyst is low in the neck, or of considerable size, it is seen to grow tense and hard when the child cries violently or makes any excessive respiratory efforts such as coughing or sneezing. On sections these tumors are of delicate cob-web like consistence, with large and small interspaces filled with lymph like fluid. These spaces are lined with a poorly differentiated type of endothelial cell which can only be shown by fresh staining with silver nitrate immediately following removal of tumor. In the small early cysts the new loculi show only a clear fluid. The older cysts which have been traumatized or infected show thickened walls and pale, pinkish, jelly-like exudate which promptly coagulates on exposure.

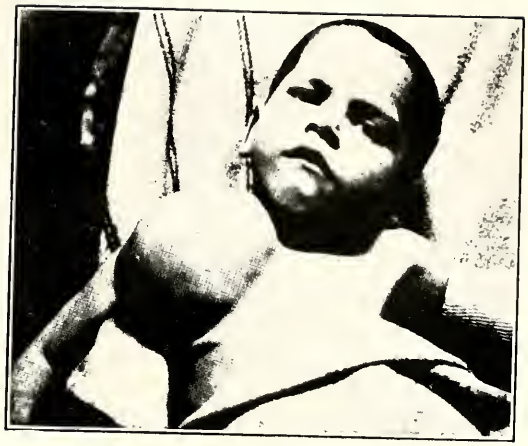
The surgical problem is usually a tedious dissection for the processes of the cyst dip down between all the muscle planes, always beneath the deep cervical fascia and often extend from the styloid process above to the clavicle and pectoral muscles below. Rapid recurrence always follows incomplete removal and Dowd reports one recurrence in twenty-five days following the first incomplete operation. It has been my privilege to see four tumors of this type all of which were satisfactorily handled by surgical removal.

THYRO-GLOSSAL CYSTS

In this type the embryological origin is of tremendous importance, for upon the knowledge of these facts depends the successful surgical treatment. As the name implies the origin of these cysts is intimately connected with the tongue and thyroid isthmus and upon this knowledge



I. Cyst of Neck



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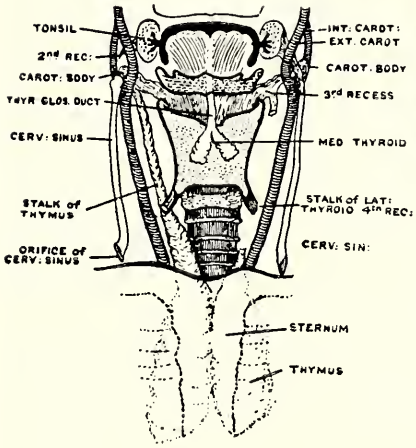

II. Cyst of Neck

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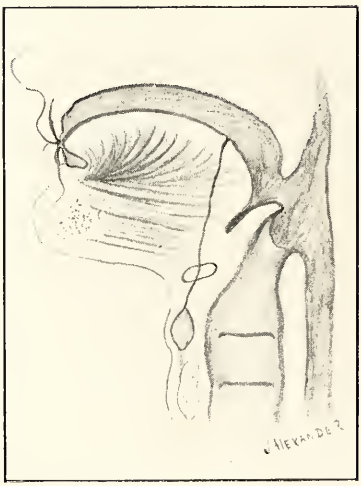

IX. Cyst of Neck

depends the surgical eradication of these tumors. Between the third and sixth week of the embryo the arches have all closed or disappeared and at this time a bud from the hypoblast grows downward from the base of the tongue at the point known as the foramen cecum passing through the pharyngeal portion of the tongue, thence through the hyoid bone, or above or below this bone, and terminates to form the isthmus of the thyroid gland. Usually this tubal bud is obliterated, but sometimes such is not the case and there then persists a tube extending part or all the way from the foramen cecum at the base of the tongue to the thyroid isthmus. This later develops into a cyst and its complete surgical removal depends on the amount of the original tube that remains patulous; occasionally the demonstrable cyst is all of the persistent embryological structure and surgical removal of this cyst will suffice to cure. Too often, however, the cyst is not all of the vestigial remains and a small tube, lined with a single layer of epithelium, runs back to the hyoid and often beyond the hyoid through the tongue to the foramen cecum. Operative failures are of course due to incomplete removal but the great problem for the surgeon is how to know when complete eradication has been accomplished.

The persistent duct is usually too small for microscopic demonstration and it is only by second and third operative attempts to cure that the surgeon realizes he must dissect the complete course of the embryological vestige. Injections of the cyst with some analine dye has found favor with some surgeons but this measure has too often failed. The surgical cure of these cysts can therefore be divided into two varieties of operations; first, the conservative which attempts to remove only what is visible, and the second, the radical which begins the dissection at the thyroid isthmus and passing up includes a small central piece of the hyoid bone and all of the vestigial tract up to the foramen cecum, thus going through the floor of the mouth and the entire thickness of the tongue at its base. This dissection calls for the removal of the persisting central tubal bud or tract, the center of the hyoid bone, the fibrous raphe of the myla-hyoid, genio-hyoid and genio-hyoglossus muscles together with the adjacent tissue of tongue around and including the foramen cecum.

The recognition of this type of congenital cyst should be easy for it always occurs in the mid-line between the symphysis mentis and the thyroid cartilage. It should, however, be differentiated from ectopic thyroid tissue, enlarged submental gland, inclusion dermoids which are always found in the median line, lingual dermoids, sub-mental cysts which develop from the cervical sinus and often called ranula and lastly from the true cervical fistula which is of branchiogenic origin and always situated lateral to the mid-line along the anterior border of the mastoid muscle.

Then too, the thyro-glossal cyst always contains a sticky mucous in contra-distinction to the pale, coagulating type of lymph found in the hygroma and if this sticky mucous is carefully examined with the microscope there will often be found epithelial cells. No cells are found in fluid aspirated from an hygroma. We have had 8 cases of these types all of which have been cured by complete surgical removal.

BRANCHIOGENETIC CYSTS

This form covers the commonly seen cysts in the neck grouped under the heading of ranula, submaxillary cyst and cervical cyst. That these cysts are embryological in origin has long been believed but no definite structural origin has been worthy of acceptance until Dr. James E. Thompson advanced the theory that these types are all derived from embryological remains of the cervical sinus. Time will not permit the writer to give you any description of minute embryology relative to this structure but briefly we may relate as follows:

At the fourth week of the embryo the second arch grows downward and covers the third and fourth arches and touches the body wall behind the fifth arch. This growth is analagous to that forming the gill cover in fishes, thereby the mouths of the second, third and fourth cleft depressions are covered up and a space is shut off into which they open. This space is called the cervical sinus and extends from the tonsils or second cleft to almost any point on the front of the neck. This sinus is usually obliterated but when this does not occur a cyst or sinus may result.

For the surgeon to know that a ranula may connect through a persistent sinus with the tonsil is highly important and that one of these cysts of branchiogenetic origin may be subject to fragmentation or isolation by muscular action, thus producing one or more cysts all arising from a mother cyst is really the crux of the problem relative to surgical cure. No satisfactory evidence has ever been advanced to prove that ranula come from mucous glands in the floor of the mouth or from salivary glands and agreeing with Thompson, the whole subject is tremendously clarified if we accept the following: From the vestigial remains of the branchial clefts are derived the ranula, the sub-maxillary and deep cervical cysts; the primary cyst results from the persistence of the cervical sinus and this is often carried from the original position by the shifting of the muscles during the formation of the neck. By the same muscles, isolation or fragmentation occurs and parts of the mother cyst are carried backward by the palate muscles while part is carried into the sub-maxillary region and tongue by the migration of the muscles of the hypo-glossal group.

It is quite common to see the persistent embryological structure show as a sinus or fistula discharging on the surface of the neck but the distinctive feature is that the opening is always located along the anterior border of the mastoid muscle. It has been observed that this fistula first began to discharge following one of the acute infections such as measles or scarlet fever and under these conditions it is often confused with the sinus of a suppurating cervical gland. If we have a true branchiogenetic fistula a fine probe can sometimes be passed quite high in the tract which is at once suggestive and particularly instructive will be the microscopic study of the discharge which will often show epithelial cells for all branchial cysts and fistulae are lined with epithelium.

I have seen several branchial cysts but only one cervical fistula and in this one case cure was brought about by an incomplete operation. The tract was dissected out above the branching of the carotids and there became so small that it was thought best to sever the connection. The

neck wound healed tightly and it is assumed that the remaining portion of the tract opened into the pharynx and thus drained to the point of least resistance.

Congenital cysts of the neck offer an interesting problem to the pediatrician and while the diagnosis is not always easy I must confess to the feeling that the cure of these cysts presents a delicate and often difficult surgical undertaking.

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Dr. B. C. Willis, Rocky Mount: I quite agree with Dr. Payne that they are exceedingly difficult cases to cure and many of them recur. It is necessary to remove not only the sinus but the cyst and the duct cyst beyond it. It reminds one of a dermoid at the inner angle of the eye. You can open that little dermoid and get out the tissue and in a very short time it will occur again. You must take out the cyst entirely or it will recur.

APPENDICITIS IN CHILDREN

By Aldert Smedes Root, M.D., Raleigh, N. C.

The cases reported here represent my experience with appendicitis in children over a period of 16 years.

A great volume of literature upon this subject has been published—yet some of the most salient and significant features have apparently been recognized by only a very few authors. It might be of some value therefore to give the conclusions which are drawn from these cases.

The first of these is that:

There is a definite relationship between attacks of recurrent vomiting and chronic appendicitis in a considerable number of cases. These recurring attacks of vomiting may or may not be accompanied by fever or by abdominal pain. If abdominal pain is present it is rarely localized in the right side and is almost always in the epigastrium.

Attacks of recurrent vomiting in children are familiar to all of you. A child hitherto well, and without any indiscretion of diet, begins to vomit. The vomiting is persistent, the patient not even able to retain water by mouth. The lips are distinctly redder than normal, and the child is drowsy, sleeping much of the time. In severe cases hyperpnea is present. The urine contains a large amount of acetone and diacetic acid. Such attacks last for 3 or 4 days, at which time the condition usually clears up rapidly. The periods at which the vomiting recur vary widely with each case—from a week to several months.

In looking through the literature upon appendicitis in children covering the past ten or fifteen years, there are strikingly few references to the relationship between these two conditions.

Comby, in 1905 (1) was the first apparently to refer to chronic appendicitis as a cause of "cyclic vomiting."

In 1920, Dr. McGuire Newton (2) expressed the belief that attacks of "cyclic vomiting" or conditions referred to as "acidosis" in children were in some instances due to a diseased appendix.

In 1921, Gray, (3) working in conjunction with Newton reported the X-ray findings in some of these cases and stressed the value of the X-ray in the diagnosis of chronic appendicitis.

In 1924, Stuart McGuire, (4) wrote: "My experience has been such that I feel justified in advising appendectomy in cases of recurring attacks of acidosis in children when hygienic and dietetic treatment have been exhausted without relief and where no other focus of infection can be discovered. Under these conditions I would urge the operation with great confidence if the X-ray examination showed the appendix was not normal."

In 1925, Gray, (5) reported the X-ray findings in 6 cases of chronic appendicitis which were associated with attacks of acidosis.

In the text book of J. Crozier Griffith, (6) there is this reference: "Some cases of repeated attacks of vomiting of the recurrent type probably owe their origin to actual appendicitis."

These six references are the only ones pertaining to the subject I was able to find in the great mass of literature which has dealt with appendicitis in children.

My own experience is with 7 cases—which I will report as follows:

Case 1: A good many years ago shortly after I had begun to practice medicine, I was called into consultation by a man of large experience to see a child five years of age who was suffering from uncontrollable vomiting. There was a history of many such attacks in the past—but this one was more severe and the vomiting more persistent than in the others. The child looked distinctly sick, and prostrated. The tissues were dry. The physical examination of heart and chest was negative. The abdomen was slightly distended but no pain, tenderness or rigidity were present, and no mass could be palpated. The urine showed a large quantity of acetone and diacetic acid. The temperature was normal. A diagnosis of recurrent vomiting was agreed upon. This was on the third day of illness. On the following day the child was in severe shock with subnormal temperature and rapid pulse of poor quality. The physical findings were the same. The W. B. C. was 20,000. My senior—recognizing the "abdominal facies"—urged immediate operation. The appendix had ruptured and the belly was full of free pus. After a long and stormy convalescence the child recovered.

This case was of inestimable value to me for my eyes were first opened to the fact that appendicitis in young children is one of the most difficult of all diagnoses to make, and secondly that attacks of recurrent vomiting may have as their underlying cause a pathological appendix.

Case 2: Baby R., a girl, 16 months old. Was normally delivered and weighed at birth, 8 pounds. She was nursed for one month, then placed on Klim milk. At the time of examination she had cow's milk, cereal, orange juice and vegetable soup.

For the preceding year the baby had been having attacks of vomiting at intervals of every three weeks or a month. At such times her temperature was

100 to 101 degrees. She was drowsy and vomited all food and water. The stools remained normal; the lips were noticed to be redder than usual. The duration of the symptoms of the attacks was from 3 to 4 days. During the most recent two attacks she had had abdominal pain.

She was a well nourished baby, weighing 22.5 pounds. The skin was pale, muscles were somewhat flabby; there was no evidence of rickets; the heart and lungs were negative and the abdomen was slightly distended. There was distinct tenderness and rigidity over the appendix, and a mass could be felt in this region. Her temperature was 101 degrees, and W. B. C. were 18,000.

Operation was performed under light anesthesia, and about a dram of pus, which was well walled off, was evacuated. The appendix was large and held with adhesions to the abdominal wall and cecum. The abdomen was closed with a small drain, which was removed after three days. The baby made an uneventful recovery and was discharged from the hospital after twelve days.

Case 3: Master G. S., male, age 6 years. Weight 39¾, height 46 inches. Was well developed and well nourished to age of two years, at which time he had a severe attack of vomiting lasting five or six days. Three months later he had a similar though more aggravated attack. When he had recovered from this his tonsils and adenoids were removed, with the hope that these were the underlying causes of his "acidosis." This measure failed to be effective and at intervals of every 4 or 5 months the attacks would recur. As a consequence he remained constantly in a state of undernutrition.

The physical examination when first seen September 8, 1924, was negative, except for being about 15% underweight, somewhat pale, and having a prominent abdomen.

X-ray with barium meal indicated definitely an abnormal appendix. The organ was removed, convalescence was rapid and he gained three and one-half pounds during the next two months.

I have seen him within the past two months and he is normal in every way and has had no suggestion of an attack since the operation.

Case 4: D. C., male, age 5 years. Was never a robust baby—and at the age of three years began to have attacks of uncontrollable vomiting. These attacks occurred at intervals of every six months and would last for four to six days. They were accompanied by slight elevation of temperature and epigastric pain. No digestive symptoms were present.

In April, 1923, in the course of an attack of influenza he had an elevation of temperature with pain, tenderness and rigidity over the right lower quadrant. The symptoms gradually subsided and his respiratory infection cleared up. In May, one month later, he suffered from another attack of vomiting with epigastric pain. The leucocytes were 12,000. In the following month he was operated upon, and a chronically inflamed appendix was removed.

The child's general health has substantially improved, although he is still about 10% underweight for his height. He has had no further attacks of vomiting.

Case 5: D. B., male, age 4 years. Weight 30 pounds. Height 39 inches. This child had been having recurring attacks of vomiting since two and one-half years of age. They were not accompanied by abdominal pain nor fever. The duration was from two to five days, and occurred at varying intervals of three to five months. He was pale (Hb. 60%) with poor musculature and was 20% underweight.

The tonsils were enlarged and there were present some small cervical glands. Apart from these features the physical examination was essentially negative.

X-ray examination pointed to a chronically inflamed appendix. Operation was performed and a long adherent appendix removed. He weighed thirty-seven pounds a year after this—a gain of seven pounds and he has had no more attacks of periodic vomiting.

Case 6: Baby C. R., age 25 months. This child had had three or four attacks of vomiting of the recurrent type during the past year. They only lasted three or four days and he rapidly recovered from them. He was seen in consultation upon this occasion after several days of persistent vomiting. During this time he had lost much weight and was in a state of shock—with sunken eyes, rapid weak pulse, clammy skin and subnormal temperature. The right thigh was flexed upon the abdomen and there was a palpable mass in the right lower quadrant. An emergency operation was performed. The appendix had ruptured, and there was free pus in the belly. The patient died a few hours after the operation.

Case 7: M. H., male, age 4 years. Since the age of eighteen months this child has had attacks of vomiting with abdominal pain present. The attacks occur at intervals of one to three months and last from two days to a week. He does not have fever at these times. The pain is epigastric, not localized on either side, and there is no rigidity of the abdominal muscles over mass palpated. The patient is always very drowsy during the attacks. He is now recovering from one of them. The W. B. C. are 13,500.

X-ray report made upon the same day as the examination was to the effect that the appendix was involved. This child is to be operated upon after a few weeks, and I feel sure. in the light of the other cases reported, will be relieved permanently.

The second conclusion deducted from cases of appendicitis in children I have observed is that acute appendicitis in the infant under two years of age is by no means as rare as we are led to believe from the references in the literature. It is acknowledged by all of the authors that the diagnosis is most difficult and that probably cases are overlooked.

In 1917 Abt, (7) was able to collect but eighty cases—thirty-eight during the first year and forty-two during the second year. Of the thirty-eight cases in the first year ten were associated with strangulated hernia.

The following three cases of acute appendicitis in infants under two years of age and upon whom operation was performed are reported as follows:

Case 1: Baby Roberts, age 8 mo. f. wt. 13½. Baby has never been robust. When first seen about a month ago had definite evidence of rickets—beading at costo-chondral junction, flaring ribs and pot belly.

Under the influence of proper diet, ultra violet radiation and cod liver oil baby made a rapid advance in weight and improved in general condition, having gained one and one-half pounds in the two weeks preceding the present illness.

Two weeks ago became acutely ill with tonsilitis. The urine examination at this time was negative. The fever continued, and on the fifth day after onset pus was found in urine. This persisted in spite of, first alkaline treatment, and later urotropin. The fever was consistently around 103 to 104 degrees.

For past three or four days has been vomiting a good part of the lactic milk given, and has been fretting and whining a good deal as though in pain. Three days ago the W. B. C. was 17,000. Today W. B. C. 24,000.

The abdomen has been distended some, but no masses or localized tenderness have been elicited heretofore.

Physical Examination: A very ill baby, lying on back with thighs flexed on abdomen, and whining as though in pain. Anterior fontanelle: negative. Ear drums, negative. Mouth: lips cherry red. Throat: tonsils slightly inflamed. Mucous membrane of mouth clean. Two lower incisors. Thorax: beading at costo-chondral junction, and flaring ribs. Heart and lungs: negative. Abdomen: distended. Upon deep palpation one has the distinct impression of a mass in the right lower quadrant. There appears to be some tenderness in the right upper quadrant. There is no muscular rigidity. Extremities: negative.

Operation for appendectomy was performed. The appendix was post-caecal and long, adherent and acutely inflamed.

After three days the temperature became normal and the patient made an uneventful convalescence.

Case 2: Baby Wilder, a boy, age 13 months, was still nursing, and had Graham crackers and a little buttermilk.

He had failed to gain since the age of six months. He became acutely ill a week previously with diarrhea. Loose bloody stools, accompanied by tenesmus, occurred every half hour, and later every two or three hours. His temperature was 102 degrees. He had lost strength and weight rapidly, and for the preceding twenty-four hours had been vomiting all fluids.

Physical examination showed a very toxic baby, with marked dehydration. His weight was twelve pounds two ounces. His fontanelle was large and depressed. His thorax showed beading at the costo-chondral junction, and flaring ribs. His heart was rapid with poor muscular sound. No pulse was felt. The abdomen was flat and soft, with poor tissue turgor. His temperature on admission to the hospital was 105 degrees. There was distinct hyperpnea.

On admission, 150 c.c. of 5% dextrose were given intravenously, and water every hour and adrenalin chloride hypodermically. Six hours later 300 c.c. of saline were given intraperitoneally. On the following day 100 c.c. of citrated blood was given in the external jugular vein. The condition of the baby improved. There was no hyperpnea. He retained one ounce of lactic acid milk every three hours. His temperature was 104 degrees. On the third day he received 500 c.c. of saline intraperitoneally. He took and retained two ounces of lactic acid milk every four hours. On the fourth day he took and retained three ounces of lactic acid milk every four hours. His temperature was 103 degrees. For the next three days his condition remained about the same. On the eighth day after admission, his temperature dropped from 103 to 101 degrees.

Then he began vomiting both milk and water. The abdomen was slightly distended with generalized tenderness and rigidity. The vomiting continued at intervals all night and on the following day. The temperature now was 100.4 and a distinct mass over the region of the appendix could be felt. The abdomen was opened under local anesthesia and an appendiceal abscess containing about one dram of pus was evacuated. On account of his bad physical condition the baby did not stand the shock of the operation and died several hours later.

Case 3: Baby R., reported above (case 2). The third impression which I have of appendicitis in children is the difficulty of diagnosis because infants and young children do not show the symptoms—pain, tenderness, rigidity, fever, leucocytosis as does the adult.

By far the two most important means of arriving at a diagnosis are (1) uncontrollable vomiting of the recurrent type, and secondly through the means of palpation. Every case of uncontrollable vomiting in an infant or young child should excite our suspicion—particularly so if there is a previous history of such attacks. The sensation of a mass, not rigidity, is the most important physical finding. It is needless to say that the utmost patience must be observed in carrying out this procedure. It is imperative that the child's abdominal muscles be relaxed, and it must be remembered that in an infant the lumbar spine is short—hence the appendix high up.

The third most valuable criterion in acute appendicitis is the leucocyte count.

Two points in the diagnosis of chronic appendicitis which I wish to especially stress in this paper are the history of attacks of recurrent vomiting and the X-ray findings. I will not go into the details of the latter, suffice it to say that a majority of the suspected cases are verified by roentgenological examinations and where this obtains the diseased organ should be removed.

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DISCUSSION

Dr. R. L. Payne, Norfolk, Va.: Mr. Chairman and Gentlemen: I enjoyed Dr. Root's paper very much because it is more or less new in its conception of appendicitis and because of the skillful way he has handled acidosis in infancy. Acidosis is due to a carbohydrate starvation. We know it is more or less true for the presence of acidosis is due to a disturbance of fat metabolism and the lack of sugar as a fuel. When we try to find some cause of this acidosis and connect it with infection we are getting into deep water, for as far as we have been able to go clinical experience has been meagre in establishing a cause of acidosis. You are familiar with the crusade against tonsils years ago and still so, in some cases to relieve cyclic vomiting. That coincides with Dr. Root's opinion that infection in appendicitis is associated with acidosis. At the Southern Surgical Meeting at White Sulphur Springs I heard Dr. Stuart McGuire read his paper. This paper created a considerable bit of discussion by a number of experienced surgeons, and Dr. Root's paper adds another connecting link to the data first brought out by Dr. McGuire Newton and followed out by Dr. McGuire. I have had no experience in treating these cases. We see appendicitis in children, and almost invariably if they come in forty-eight hours old we find acidosis and vomiting, but what Dr. Root has brought out is the difficulty of diagnosis, and he states it must be made by tenderness, rigidity or palpation. To me the greatest

difficulty, in making diagnosis in the abdominal region of a child, is in our effort to palpate the little fellow's abdomen, and I want to bring in a point which Dr. Root left out inadvertently. A method of palpation, which has been of more value than all of the information I have been able to gather by abdominal palpation, is rectal examination.

The most sensitive finger is the middle finger. In the child we do not have the redundancy in the sigmoid as in the adult. There is a wide lateral motion allowed the finger if the child's feet are held up, in the position as if to wipe his buttocks, and if the middle finger is introduced one can palpate the entire length of the caudal canal and thus avoid the struggling of the child which you have to contend with if you palpate the abdomen. Where there is an abscess with appendicitis, rectal palpation will allow you to determine this when you can rarely do it, with the struggling child, through the abdominal muscles.

Dr. B. C. Willis, Rocky Mount: The general surgeons do not see these cases of acidosis secondary to appendicitis in the stage of acidosis but later. That has been my experience and I notice Dr. Payne says he has had very limited experience. The problem is that of the general practitioner for they are the first ones called and unless they can recognize the appendix as the underlying cause, some of these patients will die before they reach the surgeon. Those cases that I have seen had frank appendicitis and acidosis when brought in. I was delighted to hear Dr. Payne's discussion of this paper and I think the subject is one that the Society should pay close attention to as I believe some of these children are dying that might be saved.

Dr. Wilburt C. Davison, Duke University, Durham: The relationship between appendicitis and recurrent vomiting which Dr. Root and Dr. Bugg have observed is very interesting. It may be possible that recurrent vomiting is due to two factors—a predisposing cause and a precipitating cause. For example, Dr. Hugh Josephs and others have demonstrated that if certain children go without food for twenty-four hours, an extremely low blood sugar develops and recurrent vomiting may follow. In these children fasting and resulting hypoglycemia act as the precipitating cause. Perhaps in certain of the patients observed by Dr. Root and Dr. Bugg the vomiting and lack of appetite occasioned by the attack of appendicitis have caused a reduction in the blood sugar and that this has precipitated an attack of recurrent vomiting.

Dr. Chas F. Strosnider, Goldsboro: These cases occur quite frequently and as has been truly said in the case of acidosis we tried first one thing and then another. My observation of the little patient is as described by Dr. Payne, and in many cases it is taken as colic. The child begins to cry, the mother cannot quiet him, he refuses food and continues to cry. You take a urine examination, you find it negative. The temperature after four or five hours begins to climb, the child continues to cry. In the case of a child six months of age, nothing could be done to quiet the child. The temperature was subnormal. The white cell count started at 4,000, in four hours went to 10,000, and in five hours to 12,000, and the temperature went to 100. The child went safely under the anaesthetic, soon began taking nourishment, continued to im-

prove and is getting along well up to the present time. The child when taken has a desire to go to stool. There is no bearing down at stool. Early in the attack most of these cases do have nausea and vomiting and abdominal pains. You have them with inflammation of the ear, you have acute abdominal pains with lung conditions, pyelitis. All of these things the general practitioner has to take into consideration. The temperature is one thing, the rectal the second, the failure of the child to bear down at stool, to concentrate, and persistent vomiting. This disease in my opinion is very common and the general practitioner will find you have more in the spring, which points furthermore to the subject of this paper, infection playing a part in children.

Dr. C. R. Bugg, Raleigh: Dr. Root knew that he would provoke some discussion when he attempted to connect up chronic appendicitis with recurrent vomiting. We do not know much about the cause of recurrent vomiting, certainly few of us understand the metabolic disturbances which produce acidosis. It was not Dr. Root's idea that every child that has recurrent vomiting is the victim of appendicitis, but to call the attention of the profession to the possibility of some cases being due to this. The result in these reported cases has been very striking.

I remember the case referred to by Dr. Davison. There was another child who used to come in about once every two months with sunken eyes, a look of nausea, and striking dehydration. She never vomited in the hospital in eight or ten admissions. This type of recurrent vomiting is entirely different. It has a neurotic basis, and is an environmental and social problem.

Dr. McGuire feels now that it is a little dangerous to make general statements about this type of vomiting being due to chronic appendicitis. There is an occasional case that is relieved by removal of the appendix, but this is to be done only after other causes have been ruled out, and as a last resort.

Dr. Payne's suggestion about rectal examination is excellent. There is no other way that we can get as definite an idea in a small child—in most of the acute cases an actual abscess has formed, which will almost certainly be felt by such an examination.

Dr. Davison mentioned hypoglycemia. Dr. Josephs, one of his associates, has been much interested in this for sometime, and has some cases which he has practically proved to be due to starvation.

The question of acute appendicitis in children is one that could be discussed all day and everybody would have something to contribute because everybody has some of his own ideas about symptoms that help him in his own cases. Certainly vomiting is a most striking symptom with practically all of us. I usually feel if the child has not been nauseated that is definitely against it; and that is the connection Dr. Root was trying to draw between vomiting and appendicitis, especially in the chronic cases.

INTRACRANIAL HEMORRHAGE OF THE NEW-BORN

By John C. Tayloe, Washington Hospital, Inc.

During the last ten years there has been a renewal of interest in this subject. Before this time we had been content with making a diagnosis, and treating these babies by keeping them quiet and trusting to nature to absorb the blood and oedema present and that she would do a good job of it—so that the general sequella of this condition, namely cerebral spastic paralysis would not develop.

Sharpe and Maclaire have shown that this condition existed more often than we supposed it to exist. They performed lumbar puncture of 500 newborn babies in the City Hospitals of New York, and found a bloody, blood tinge or yellow color fluid in nine per cent of these cases. These fluids together with the symptoms, they believed, indicated meningeal hemorrhage. They suggested lumbar puncture as both a means of diagnosis and treatment. Sharpe found by operations on babies with intracranial hemorrhage that the blood remained in a fluid or partly fluid state, up until the fifth day after birth. By repeated spinal drainage, he contends that one can drain off the free blood and serum and thereby prevent an organized clot from forming, at the same time relieving intracranial pressure and its symptoms and also help the absorption of nature of the remaining blood that is not drained off by the spinal tap; to be absorbed through the subcortical veins. This view to me seems quite plausible and they have reported a number of cases treated in this manner with marked benefit.

Since the report of their work there has been stimulated interest in this condition, and many pediatricians now agree with Schwartz of Berlin who wrote: "That the pathology of the first month of life is completely dominated by birth injuries of the brain," and who found that sixty-five per cent of 130 children coming to autopsy before the age of six months there were hemorrhages or result of hemorrhages; and he believes that a large majority of diseases of children in the first six months after birth are the immediate or remote effects of these hemorrhages. Rhodda in a study of a large number of autopsies on babies dying before birth or soon after at the Newborn Clinic of the University of Minnesota Hospital found fifty per cent of these children to have intracranial hemorrhage. Thus we see from these reports that intracranial hemorrhage in the newborn is by no means a rare condition.

Most of these hemorrhages occur either supratentorial, infratentorial or intraventricular. Quite often in massive hemorrhages the extent is throughout the spinal cord as well. This has been definitely proved by autopsies.

It is necessary in the treatment of any condition to first ascertain the cause, and then apply treatment with a view to preventing the cause and removing that cause.

The causes of intracranial hemorrhage are:

1. Trauma
2. Asphyxia
3. Hemorrhagic disease of the newborn
4. Fetal or maternal disease

5. Prematurity
6. Pituitrin
7. Many authors believe that vigorous methods or resuscitation aggravate and increase any slight intracranial hemorrhage that might be present at birth.

Trauma, I believe to be the main cause of this condition. It occurs more often in firstborn children, and especially in prolonged labor, whether due to placental, maternal or fetal dystocia. It occurs more often with high and medium forceps and breach extractions. Properly applied low forceps play but a small part in the production of intracranial hemorrhage, and when applied at the end of twenty-four hours neither increases the risk or danger of intracranial hemorrhage any more than normal labor. Intracranial hemorrhage has occurred in children born spontaneously; this is probably explained as due to suddenly released pressure on the child's head when born, with the uterine contraction still on the body, forcing the blood into the cranial vessels, resulting in engorgement with the occurrence of smaller or larger hemorrhages. Precipitate or too rapid deliveries are a causative factor, because moulding of the head is necessary for labor, and without moulding of the cranial bones, the powerful uterine contraction will produce in some cases overriding of these bones, with severe laceration of the sinuses and subcortical veins with resulting hemorrhage. Pituitrin, I believe, acts this way.

Asphyxia as a cause is due chiefly to the result of interference with placental or fetal circulation, due to pressure on the cord, premature separation of the placenta, or an extremely contracted uterus. As a result of this there is an engorgement of the vessels of the brain, which together with trauma may cause them to rupture.

Prematurity is a cause due chiefly to the fact that the subcortical veins are not fully developed, and on becoming engorged are more likely to rupture. This condition is quite common in premature babies.

Hemorrhagic disease of the newborn is regarded by many observers to play only a small part in the causation of intracranial hemorrhage. It has been shown, however, by Rhodda and Sidbury that the bleeding and clotting time may be normal the first three days of life and then begin to lengthen out. This fact and their findings play an important part in the treatment of this condition.

Fetal or maternal disease cause toxic bodies to circulate in the blood, probably damaging and making the blood vessel walls of the brain more friable, and therefore more susceptible to trauma or extra strain upon them at the time of birth.

The symptoms and signs of this condition vary from practically none that are appreciable in the early stage, until the later stage of convulsive seizures and bulging fontanelle. The most common signs are: Muscular twitches of the hands, fingers, feet, toes, prolonged cyanosis, poor nursing or refusal to nurse after nursing vigorously from two to seven days; drowsiness to stupor, respiratory difficulty, bulging fontanelle, which may or may not be present, and constant crying or groaning.

In discussing the treatment of this condition all of us that see a case of cerebral spastic paralysis late in life, say after one year, realize

that at the best the only thing we can hope to do for these cases is a slight improvement. Of late the neuro surgeon and orthopedist have been able to help us some; but in order that these cases may be more successfully treated it is absolutely necessary that they be treated early.

We are living in a day of preventative medicines and the most successful way to treat this condition is to prevent it. This lies in the hands of the obstetrician, who has charge of these cases first, but unfortunately in many cases it is unavoidable in the most expert hands. The obstetrician should never hesitate to call to his aid a pediatrician, so that the proper treatment may be applied. They should work in cooperation, and by doing so prevent intracranial hemorrhage from leaving its terrible sequella, namely, cerebral spastic paralysis.

On the services of Dr. Polak of Long Island College Hospital it is a rule that any labor that has been unduly prolonged, or that has been a difficult obstetrical procedure or in any case that you have strong suspicion that intracranial hemorrhage might develop should receive 20-25 c.c. of whole blood,—intramuscularly between the scapulae. This according to the work of Grob of Mayo Clinic will certainly shorten the bleeding time. I have seen this done 80-90 times without the formation of an abscess, and it is usually absorbed in two to five days. This procedure will aid in the clotting of the hemorrhage before it progresses too far.

Then after this in each child, whether he has had a prolonged labor or difficult labor should it develop any signs that would lead to suspect intracranial hemorrhage—should have a spinal tap performed for diagnosis, and if uniformly bloody or blood tinged fluid, or straw colored fluid is obtained we should tap the spine every eight to twenty-four hours, depending on the severity of the symptoms until the spinal fluid is clear. By following these two procedures we are doing something to prevent the serious aftermath, namely, cerebral spastic paralysis and help to save a child from death, or from a life of idiocy or a "living death of mental defectiveness."

I do not claim that these two methods of treatment will always prevent every case of intracranial hemorrhage from dying, or going on to recovery will not cause cerebral spastic paralysis, but it will relieve intracranial pressure in acute cases; it will prevent some from dying; and it will prevent many cases from developing cerebral spastic paralysis. Lumbar punctures do no harm, except in babies that are in shock, and in these cases it should not be done until they have recovered from this state—same as is done in acute cranial injuries in adults. Many men have reported cases of puncturing the spine and used control cases that were not punctured and those that were tapped showed better results. Wilson of Brooklyn reported three cases with symptoms of intracranial hemorrhage that were treated by lumbar puncture and were observed for three years and none show signs of intracranial injury, while at the same time three other cases that were not treated by lumbar puncture, at the end of three years showed signs of intracranial injury. Sharpe has seventy children, the oldest is nine years old, treated by this method—none of which show signs of intracranial injury.

Grulee is the chief opponent to this form of treatment, he contending that the damage is done to the brain in the first twenty-four hours, and that spinal drainage does not relieve the injury. Sharpe, however, contends that on operation for intracranial hemorrhage he has found blood that has not clotted as late as the fifth day. This blood can be drawn off before then and the blood not allowed to clot, the repeated spinal drainage will draw off a certain amount of blood each time and thereby prevent a large clot from forming at least, so in this way it certainly does good and not harm. In spite of this assertion of Dr. Grulee many men are using spinal drainage and are getting better results, than with no treatment except rest and quiet. I believe that it certainly does good in many cases of intracranial hemorrhage, and can be done without harm to the baby, and save him from developing in many instances cerebral spastic paralysis.

REPORT OF CASES:

I have seen eleven cases of acute intracranial hemorrhage in the newborn. Six cases were while serving as a resident in a Brooklyn Hospital. Of these six,—they all received no treatment, except small doses of codein to keep them quiet and the intramuscular injection of whole blood. Spinal drainage was not done—not even for diagnosis. They all showed unmistakable signs of intracranial hemorrhage. Wassermanns were negative on all placental blood. There were no signs of hemorrhagic disease, and their clotting time was normal on the second and third day of life. Of the six, five died. Autopsies on three showed massive cerebral hemorrhage—the other two permission for autopsy was not granted. The remaining one that survived showed at the age of six months—spastic paralysis of both lower extremities and could not hold his head up. The spinal fluid at that time was Xanachromic.

Since being in private practice I have seen five cases of this condition who showed the signs of intracranial hemorrhage. Of these five cases three died due to massive cerebral hemorrhage causing respiratory paralysis. The other two, one baby who is now six months old had lumbar puncture performed four times before the spinal fluid became clear. The other is now four months old and lumbar puncture was performed three times before the spinal fluid became clear.

All five of these cases showed bloody fluid on lumbar puncture. All five were given twenty-five c.c. of whole blood, intramuscularly when first seen, also none of them showed prolonged clotting time or signs of hemorrhagic disease. The Wassermann was negative on three mothers. In the other two it was not done but their history was negative for lues. Two of these cases were twins, weighing six pounds and ten ounces each. High forceps were used on both. Another baby was a medium forceps case in a thirty-five year old primipara. These three cases died in spite of active treatment. The other babies, one was the first child; the other was the third. Both labors were difficult. Forceps were not used but pituitin was. These cases are living now and show no signs at present of intracranial injury, which is too early to tell for sure as to the ultimate outcome.

CONCLUSIONS

1. Intracranial hemorrhage occurs more often than we formerly supposed.
2. By the early treatment with intramuscular injection of whole blood and

repeated lumbar punctures, we can save life and prevent serious after results in many cases of intracranial hemorrhage.

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DISCUSSION

Dr. Ivan Proctor, Raleigh: This is a very important subject for the obstetrician. The essayist says that the thing for the obstetrician to do is to prevent this disease; that is the ideal thing but we cannot always do it. This is a very common disease. Sharpe, for instance, in one hundred normal deliveries found blood in the spinal fluid of nine of the babies. They were normal cases. In operative cases he found a higher percentage of hemorrhage. It is very important for us to observe the supposedly normal cases as well as the operative cases—watch every baby in the first forty-eight hours of life; particularly if the baby is not where some attendant is seeing it; it may have symptoms for forty-eight hours before the nurse or the mother happens to see a convulsive movement. They do not all have cyanosis; they do not all cry in a characteristic way; they do not all have convulsions, but they usually have some diagnostic symptom, or sign, if we only see it. I have just received 400 obstetrical records and found five cases of cerebral hemorrhage, one of premature delivery completed by version, four weeks premature. In this case the baby did not show anything indicating cerebral hemorrhage, it cried and nursed poorly, all of which were taken as signs of premature birth. After six or eight months it was recognized, as the symptoms of spasticity came on. It died following an operation a few months later.

The second case followed insertion of a bag on account of prolonged first stage. The delivery was perfectly easy and this baby appeared normal in every way going home at the end of two weeks, but at the age of four weeks showed signs of cerebral hemorrhage and died at six months. Three other cases were tapped within the first 48 hours and there were repeated drainages until the fluid was clear. All of these babies lived and are apparently in good health now.

The thing that I would like to call attention to is the recognition—we can recognize all cases with few exceptions. If we are not experienced with spinal puncture we should call in a pediatrician. I have never heard of spinal punctures doing any harm and I believe we can relieve a large percentage of these cases by it.

Dr. Tom Watson, Dr. J. F. Foster and Dr. L. W. Elias appointed committee to nominate chairman of Section on Pediatrics for the coming year.

REPORT OF COMMITTEE ON NOMINATIONS

We wish to nominate a man who has been a member only two years but has given a cracking good paper—Dr. Marion Y. Keith of Greensboro.

Report of Committee approved.

SECTION OF MEDICAL VETERANS OF THE WORLD WAR AND MEDICAL OFFICERS' RESERVE CORPS

CHAIRMAN: DR. C. S. LAWRENCE, Winston-Salem.

ACTING CHAIRMAN: DR. JOHN W. MACCONNELL, Davidson, N. C.

DR. JOHN W. MACCONNELL: The meeting will please come to order. I do not know why Col. Lawrence, the chairman, is not here. I am, as last year's chairman, going to call the meeting to order so we can pursue the regular program as far as possible on time.

CHAIRMAN'S ADDRESS, IN ABSENTIA

By C. S. LAWRENCE, M.D., F.A.C.S., Winston-Salem, N. C.

Great practical advances in the science of infectious diseases have been made in recent times through the cooperation of army surgeons. The work of Alphonse Laveran on malarial fever, of Ferdinand Widal on typhoid fever, of Friedrick Loffler and Emil Behring on diphtheria, of Colonel Sir Ronald Ross on malarial fever, of Surgeon-General Sir David Bruce on Malta fever and sleeping sickness, of Colonel Sir William B. Leishman, Major Donovan and Colonel Sir Leonard Rogers on kala-azar, will compare favorably with what John Hunter or Helmholtz accomplished during their period of military service. In the United States Army the labors of such men as William Beaumont, Jonathan Letterman (1824-72), who revived Larreys methods of rapid evacuation of the wounded and reorganized the whole administration of medical service in the field, William A. Hammond, creator of the Army Medical Museum, Joseph Janvier Woodward (1833-84), pioneer in photomicrography, Alfred A. Woodhull (1837-), ipecac in dysentery,[1] Billings, Otis, Smart and Huntington have set an example which has been followed by a number of able workers in recent times. The first American army surgeon to take up the study of bacteriology was Surgeon-General George M. Sternberg (1838-1915), who isolated the diplococcus of pneumonia simultaneously with Pasteur (1880[2]), and published valuable treatises on bacteriology (1896) and disinfection (1900), and through the localization of "Bacillus X" in yellow fever as a negative find, cleared the ground for later investigators. During his administration, Major Walter Reed (1851-1902), of Virginia, who had studied under Welch at Johns Hopkins and had done good work on the pathology of typhoid fever in his laboratory (1895), was detailed as the head of a Board consisting of James Carroll, Aristide Agramonte and Jesse W. Lazear, to study yellow fever in Cuba, then occupied by the American Army (1900). Carlos Finlay (1833-1915) had already advanced the theory that the disease is transmitted by the mosquito (1881), but when the Army Board went to Cuba, the Bacillus icteroides of Sanarelli held the field. In 1900, Henry R. Carter (U. S. Public Health Service) had

shown that a lapse of twelve to fifteen days is necessary before a case of yellow fever becomes dangerous to others. Reed and his associates soon disposed of Sanarelli's bacillus (identical with the Bacillus X of Sternberg) and proceeded at once to attack the problem of transmission by mosquitoes. During the course of their experiments,[1] twenty-two cases of yellow fever were produced experimentally, fourteen by infected mosquito-bites, six by the injection of blood, and two by the injection of filtered blood-serum, thus proving the existence of a filterable virus (1901[2]), confirmed by Rosenan at Vera Cruz, in 1903, while seven enlisted men disproved the fomites theory of transmission by sleeping in infected bedding. Carroll was the first to submit to mosquito inoculation and came through an attack of yellow fever successfully. Lazear died from the effects of an accidental mosquito bite. Thus it was proven, according to the most rigorous conventions of formal logic, that the cause of yellow fever is either an ultramicroscopic organism or a filterable virus which is transmitted to man by a particular species of mosquito, the Stegomyia fasciata or calopus. With reference to the conditions under which the experiment was performed, particularly the period of development in the body of the mosquito, the demonstration of the Army Board is one of the most brilliant and conclusive in the history of science. Its economic importance is indicated by the immense saving of life and money through eradication of yellow fever in the United States and the West Indies, if not throughout the entire world. In February, 1901, shortly after Reed had proved his case, Major William C. Gorgas, (1854-1920), of Mobile, Alabama, as chief sanitary officer of Havana, Cuba, began to screen yellow fever patients and destroy mosquitoes, and, in three months, Havana was freed from the disease for the first time in 150 years. In connection with the work on the Panama Canal, Colonel Gorgas has freed that part of the Isthmus not only from yellow fever, but from all dangerous infections, and through this great triumph in sanitation, Panama, formerly a notorious plague spot of disease, the "White Man's Grave," as it was called, is now one of the healthiest communities in existence. In 1913-14, General Gorgas, at the invitation of the Chamber of Mines of Johannesburg, South Africa, investigated the causes of the high death-rate from pneumonia among the native miners of the Rand, devoted the summer and autumn of 1916 to a survey of the endemic foci of yellow fever in South America for the Rockefeller Foundation, upon which work he was engaged at the time of his death. The investigations of typhoid fever incidence in camp during the Spanish-American War (1898), by Major Walter Reed, Victor C. Vaughan and Edward O. Shakespeare demonstrated the transmission of the disease by flies. During the American occupation of Porto Rico, the island population was vaccinated and freed from small-pox under Colonel John Van R. Hoff, and shortly afterward Captain Bailey K. Ashford discovered the presence of hook-worm infection in the Island (1900[1]) and has since devoted himself to the task of stamping it out. In 1915 he began the study of sprue as a moniliasis. Captain Charles F. Craig (1872-) demonstrated that intracorpuscular conjugation in the malarial plasmodia is the cause of latency and relapse, and that there are malaria carriers (1902-05[2]); showed that the so-called piroplasma hominis of Rocky Mountain spotted fever is really

an artefact in the erythrocytes (1904); and, in the Philippines showed with Major Percy M. Ashburn that the cause of dengue is a filterable virus transmitted by the mosquito culex fatigans (1907[3]). Craig also discovered two new parasites, paramoeba hominis (1906[4]) and (with Ashburn) Microfilaria philippinensis (1906[5]), and is the author of extensive monographs on the malarial fevers (1901, 1909) and the parasitic amebae in man (1911). Captain Henry J. Nichols collaborated with Ehrlich in his initial work on salvarsan (1910) and has since investigated the experimental production of yaws (1910-11). Under the administration of Surgeon-General George H. Torney, Major Frederick F. Russell, in 1909, began the huge experiment of vaccinating the United States Army against typhoid fever, after the methods advocated by Andre Chantemesse (1851-1919) and F. Widal in France (1888), Pfeffer and Kolle in Germany (1896), and Wright and Semple in England (1896). From a morbidity of 173 (16 fatal) cases of typhoid in 1909, Russell was able to bring his statistics down to nine cases of the disease with one fatality in 1912, while at present the army is absolutely free from typhoid. The mobilization of United States troops on the Mexican border in 1912[1] gave Major Russell an opportunity such as never came even to Jenner or Pasteur, viz.: that of testing his vaccine at a huge outdoor clinic consisting of some 20,000 men. The absolute success of his experiment is now a matter of history. Captain Edward B. Vedder (1878-), of New York City, has made important studies in beri-beri as a "deficiency disease," summed up in his treatise of 1913, and was the first to determine the specific amebicidal action of emetine in the treatment of amebic dysentery (1910-11[2]). In 1911, Captains Ernest R. Gentry and Thomas L. Ferenbaugh discovered that Malta fever is endemic in Southwestern Texas, and transmitted by the goats of the goat-ranches. In 1916, Major George B. Foster made an important investigation of the causation of common colds by a filterable virus. Lieut.-Col. Charles E. Woodruff (1860-1915) investigated the deleterious effects of tropical light upon the blonde Northern races (1905) and wrote interesting volumes on Expansion Races (1909) and Medical Ethnology (1915). In his Mutter lecture (1902) Colonel Louis A. LaGarde (1849-1920) demonstrated that sterile gunshot wounds are non-existent, because the microorganism in powder or projectiles are not destroyed by the heat of firing, but conveyed directly into the wound. He wrote a standard treatise on gunshot injuries (1914). The manuals of military hygiene by Colonel Valery Havard (1909) and X-ray technic by Captain Arthur C. Christie (1913) are in the same class. Col. Edward L. Munson, editor of the Military Surgeon, is the author of important works on military hygiene (1901), sanitary tactics, the military shoe (1912) and the management of men (1921). All these works, with the various manuals of military medicine by Charles S. Tripler (1858), Alfred A. Woodhull (1898), Paul F. Straub (1910), Charles F. Mason (1912), and others, have added much to the lustre of the U. S. Army Medical Corps at home and abroad.

Intimately connected with the history of infectious diseases is the illustrious dead-roll of its medical martyrs. With Servetus and Semmelweis, who died for their opinions, should be classed such names as

Daniel A. Carrion (verrugas), Peruvian work, Jesse W. Lazear (yellow fever), A. Yersin and Hermann Franz Muller (bubonic plague), Tito Carbone (Malta fever), Allen Macfadyen (typhoid and Malta fever), J. Everett Dutton (African relapsing fever), Howard Taylor Ricketts (tabardillo), Mexico and South America type, and Thomas B. McClintic (Rocky Mountain fever), all of whom lost their lives in investigating the diseases with which their names are associated.

MY IMPRESSIONS OF SUMMER TRAINING CAMP AT FORT BRAGG, N. C., SUMMER, 1926

Captain J. E. Kerr, M.D., Winston-Salem.

As the subject of my paper is Ft. Bragg, I am going to quote a few sentences, here and now, from the pen of Prof. Archibald Henderson on the life of Braxton Bragg. Dr. Henderson says: "A singular instance of the neglect by North Carolina of her famous sons is the case of Braxton Bragg. This native of North Carolina, born at Warrenton, Warren County, North Carolina, March 22, 1817, was one of the six full generals of the Confederacy."

The training period for the reserve officers and men of the 316th F. A., which is North Carolina's own regiment in the scheme of the national defense, was taken in 1926 at Ft. Bragg, N. C., the largest field artillery post in the world.

Theory of the national defense scheme was put to a severe test in a thoroughly practical way this year at Ft. Bragg. The North Carolina officers of the 316th F. A. regiment, with about an equal number of the 317th F. A. of Tennessee, were given a week's review and then met the test in having to induct into military service over 1000 boys, coming to Ft. Bragg for a month's instruction in the Citizens Military Training Camp.

Less than fifteen per cent of the boys had ever had any previous military training. They averaged less than 18 years in age and represented the typical raw recruits which the army receives in overwhelming numbers in time of war.

The reserve officers were to demonstrate in actual practice just what they could do with such material. The seniors were rusty, several attending camp for the first time since the war, and many others never having had the experience during the world war of receiving and handling raw recruits at all. One officer remarked "That it was perhaps hard on the boys, but excellent training for the reserve."

Opinion of the regular army observers and inspectors of the mobilization test was highly favorable. The processing of the boys began with their reception into the camp, followed by securing the life history of the C. M. T. C. student in written form. Then the reserve medical officers put the boys through a physical examination which would cost them $25.00 each to obtain from physicians in private practice. A unique plan had been worked out by the chief medical officer at Ft. Bragg for medical inspection of recruits. The work was all done under one roof. The first medical officer took the history; second medical officer examined eye, ear,

nose and throat; third medical officer chest, etc. When applicant passed through medical inspection, if successful, he was issued clothing, shoes, equipment and assigned to battery and tent. If he was rejected by medical board he was placed in the care of a sergeant or corporal and was placed aboard a train and returned to his home. It must have been a great revelation to the boys to have seen how quickly the medical inspection had picked out their defects. They must, also, have been greatly impressed with the army's requirement for physical fitness.

In two days a regiment of youth had been examined, uniformed and organized for training and drilling. High praise to the quality and intelligence of the 1,000 boys from the southeastern states was given by both regular and reserve officers. The medical officers declared them to be high average physical entities.

The two reserve (316th and 317th F. A.) regimental cadres then spent a week in drilling, lecturing, training and battery administration of the C. M. T. C. boys, being relieved at the end of their training period by the regular officers.

The mobilization scheme prepared by the army war college for the training of the reserve officers did not fail in exacting the hardest of tests in calling for a parade and review of the regiment of boys under the reserve officers. This was called for on Wednesday afternoon after the drilling had begun only on the previous Monday. Imagine more than 1,000 boys, the overwhelming majority of whom did not know how to execute "right face" on Monday, marching in seried ranks at attention upon a parade ground on Wednesday and going through the evolutions of a dress parade and review. But it was done and admirably done. The lines in platoon front passing the reviewing stand were said by regular observers to have been entirely satisfactory and a surprise. I do not profess to know how much training our boys should have in preparation for some oncoming war, but the consensus of opinion is that much unnecessary bloodshed, waste of money and human life was caused in the late war by our entire lack of preparation.

According to the insurance tables, but few of the senior officers of the reserve corps would put on a uniform for actual service should war be declared by the United States within even the next five years. The average age of the active officer in 1918 was 27 years. This average officer is now thirty-five and too old to perform the duties of a subordinate officer in time of war. And only regular officers devoting their lives to military science are competent to be field officers in time of war.

The junior officer of 1917-1918 is now out of the game should war be declared. The principal need of the reserve officers corps now is the qualification of second and first lieutenants. This personnel can only come from the R. O. T. C. units, who must take six weeks training at a camp under regular officers following graduation from their schools, before receiving commission in the reserve. I am indebted to Dean Newman, a fellow officer, of Tennessee, for many of these impressions.

General Bowley and all the officers under him were exceedingly kind to us. Discipline was necessary and was required but it was noticeable that every vestige of the "hard boiled" officer of yore had passed into the shades of the by gone.

I will not close without stating the most lasting and revealing impression of my trip. Two splendid officers had made the trip from Tennessee to Ft. Bragg to do a bit of service for their government. Unawares to them nephritis and high blood pressure had begun its deadly work in them. One was returned to his home and the other was a source of concern to his medical officers. Fellow officers, my advice to you is that you check up on yourselves when you return home lest you, also, should be sharing the fate of these brother officers.

If you are still physically fit, I recommend that you take advantage at least occasionally, of the Reserve Officers Training Camp.

Dr. MacConnell: This paper is now before you for discussion. We will be glad to hear from any one as a matter of discussion or added information in regard to the summer camps.

Dr. W. G. Byerly, Sanatorium: I have attended two of these summer training camps as part of the Medical Personnel of the 322nd Infantry, and have immensely enjoyed them both. Last year I was at Fort Moultrie, and the year before at Fort McPherson in Atlanta. This year I go to Fort Bragg and therefore Dr. Kerr's paper was most interesting, because it gave me an insight into just what the duties are at Fort Bragg. Both the camps I attended were splendid. They keep the Medical Reserve Officer busy, for one reason because the work is properly outlined and the general routine is closely followed by the Reserve Officer, and another reason the regular officers on duty certainly do like for the reserve officers to relieve them, especially at night. I certainly did enjoy Dr. Kerr's paper and hope that it will prove a stimulus for others of us to attend the summer training camps.

Dr. G. G. Dixon, Ayden: The paper before us, "The Impressions of a Summer Camp" would bring out a good many thoughts that could be put in use elsewhere in the Society to a great advantage. We heard this morning the President's address, stressing routine physical examination for everybody. I wonder how many members of the North Carolina Medical Society have a physical examination for themselves annually. The summer training camp gives the reserve officer a fairly good examination. I daresay that the only men in this section that have had an examination are those who have attended a summer training camp.

Another thing that the summer training camp does is to give the medical officer a chance to see what a well man is like. The only healthy people, without physical defects, that we examine are those that we examine for life insurance. Most of us do a little bit of life insurance work but we do so little we scarcely know what a well person is like. The day has not yet come, I am sorry to say, when a physician is his patron's health director. We in general practice are supposed to operate what might be termed a repair shop. We do not operate what would be termed service stations, to keep our people in good condition.

That is the one thing that the summer training camp does for us—helps us check up on our physical condition as well as keeps us informed by checking up on our neighbors and patrons. I believe that one thing would make the summer training camp worth while if there was no military end to it.

Dr. H. A. Newell, Henderson: There was one point in Dr. Kerr's paper with which I differ, and that is that the chief function of our government, so far as the reserve officers are concerned, is to train lieutenants and that regular officers were available for field officers. My experience has been different; my impression has been that there are only enough regular officers to serve as advisers or instructors for the emergency officers. When you go into war you have to have so many doctors that you certainly will have doctors of higher ranks than lieutenants. Take our experience in the past war—look at those of us here who held field work, or better; Dr. Dunn and Dr. Burrus, for instance, sitting over there, and the others who served in the past war. When you look at the capacities in which they served, you realize that the statement is hardly correct as a generality, I think.

Dr. Alfred Blumberg, U. S. Veterans' Hospital No. 60, Oteen: I am not a member of this Society. I am merely a visitor and am a member of the Utah State Medical Association. The remarks of the former speakers have been quite interesting.

There is a great difficulty which we have to recognize. According to new regulations every member of the organized reserve is supposed to take one summer's training course annually or a certain amount of correspondence course. The average practicing physician does not have time to enter a detailed correspondence course but he might enter the training camp. There is practically no money for such purpose. How is it then possible to fulfill the requirements? I believe one of the functions of this Society is to emphasize the fact that it is necessary to have trained medical officers. I do not agree with the statement that the making of field officers is the very important task. It is necessary to have other officers, such as—second lieutenants, first lieutenants and so on. If we have too many high officers we will be like the past Mexican army—too many generals. I believe physicians can be persuaded to go to summer camps for training if the promise that such training is available can be kept. At present it cannot be fulfilled because of lack of funds.

We ought to create stronger propaganda and try to assist as best we can to make proper camp training of medical reserve officers a possibility.

Dr. J. B. Bullitt, Chapel Hill: Dr. Kerr's paper opens the way for a very important question: What is the purpose of our having the Veterans Section in our Medical Society? One purpose, at any rate, is to maintain interest in the Reserve Corps. We ought to have a full house present; we have only a handful. Most of us, at least many of us older men, who served in the last war, will probably not be of great service in the next war, unless one comes soon; but we ought to retain our places in the organization. Not only the government, but we as physicians, ought to be interested in maintaining the organization of the reserve corps in order that we may have adequate preparation. Those who served in the past war know how completely lost we were when we first went to the camp; we know how others in any war to come will be lost. To my mind, the chief function of this section should be creating interest among the younger members of the profession in entering the reserve corps. We have some, but not enough. We ought to exert our efforts to create

in our whole Society an interest in the medical reserve corps and to induce as many of the younger men to enter training as we possibly can. In order to do so we older men must maintain our interest, and we must go to the camps in order to talk interestingly on the subject.

Dr. Fred Nash, St. Pauls: I want to heartily commend Dr. Kerr's paper to you. I want to ask that each man make it his business to get one good medical man to join the reserves. I think we are making a mistake in not pushing this subject forward.

It was my pleasure last summer to be at Camp Barancas. The summer camps are entirely different from the wartime army. It will be a pleasure and a real education for you to attend one of these summer camps. It will be a pleasure to meet these C. M. T. C. and R. O. T. C. boys. They are the prize boys of our country. Our average boy in high school knows nothing about the flag, and if we do not do anything else—and we do—if we teach them nothing but the salute of the flag we are doing a great service.

I want to ask you and I would like to ask the Chairman to memorialize the Society to ask that every member of the Society get one man to go to the C. M. T. C. camp. You will make a man and a good citizen.

Dr. A. B. Holmes, Fairmont: There was a young man in whom I was interested and after being at a summer camp we succeeded in getting an appointment to West Point for him. I feel that he has brought honor to our entire county of Robeson. The latter two years he was second high man and had his picture in the sepia section of the New York *Times*. I feel the beginning of his work was the training camp, to which Dr. Kerr has referred.

Dr. John W. MacConnell, Davidson: I wish to emphasize what Dr. Nash has said in regards to members of this section trying to get new men to join the Reserve Corps. Since I arrived here today one physician who served as private in the World War asked me to help him get a commission in the Medical Reserve. I am the physician to Davidson College which has an active R. O. T. C. unit which has gained Distinguished Rating from the War Department, the only time this rating has been given to any college in this State. Many of our graduates study medicine and always seem anxious to get into the Medical Reserve, for by joining the R. O. T. C. unit in the medical college they are commissioned as first lieutenants when they graduate.

In order to obtain promotion the reserve officer must either go to a summer camp or take a correspondence course, and as all know, the easiest and most pleasant choice is the summer camp, for it is fifteen days of pleasant vacation with pay and improves the health as well as stimulates one's interest in military affairs. I have been for two years at Carlisle Barracks, Pa., where a regular medical regiment is stationed and which gives demonstrations for the reserve officers. No physician need fear that he will be subjected to any hardships for the officers in charge are very considerate, and the work of routine is done by officers of Medical Administration, a new branch of service since the World War. Formerly many good medical men were placed in positions where they

had no opportunity to use their special training. This condition exists no longer.

Dr. E. A. Livingston, Gibson: I believe the reason we can not get the medical men interested in the Reserve Corps and summer training camp is that they were cured at Oglethorpe. During the past war they took a number of the best medical men in the country and gave them clerical work or work not at all in their line. When you give medical men non-medical work or work entirely out of their line, you will not stimulate interest. They made it a point at the Medical Officers Training Camp to give the doctors anything except the work in which he was interested. In fact, they frequently sent cards around to be filled out asking you to state the class of work you would like to do, and no man I have ever heard of got what he asked for. In fact, I knew men who would say they wanted obstetrical work, knowing they would not get what they wanted. These are some of the reasons it is impossible to interest a number of men who have seen service in the Medical Reserve Corps.

Dr. J. M. Templeton, Cary: I agree in practically everything that has been said. The medical man has become such an important factor in war that we cannot afford to leave him out of consideration in the matter of preparation for war. If we do one of these day we will be involved in war with China or Japan or some other country and will be as badly unprepared medically as if we would try to carry on a war with flintlock guns.

We haven't enough veterans of the war in this hall. It is only a handful; the place should be full. We need to instill some spirit and inspiration into the war veterans. If we would do that and have a live organization the young men would naturally be drawn into it and would go to the training camps and be prepared for future wars.

I want to concur in the remarks and thank the doctor for his paper.

Dr. W. L. Dunn: I was impressed by how much more easily medical officers who came from countries in which there was compulsory military training, handled their jobs. I was subject to one of the discourtesies of the army and I served in Italy. I think one of the outstanding experiences I had in coming in contact with these men was how much more easily these Italian medical officers handled their jobs than did our men. There was not very much of things military about our jobs, about my own, but it did bring me in contact with not only the medical officers of our army but with the medical officers of the Italian army, the French and the English. Of course, they had been in service longer than we, but we could not help being struck with the facility and the ease, the *savoir faire,* if you please, of the men who came from countries where they required military service. I think we must not minimize the importance of some military training for our medical officers. It is a shame, a wicked shame, with all the veterans of the war that we should have this handful. There is something wrong, more than our experience in Oglethorpe. I worked in Oglethorpe. We must see, we *must* see, that next year, if we have to pledge to bring in two or three men, we must be *sure* to see that this meeting is a real meeting. It is worthy of our interest. It is worth

while. We have too many things in common. Every man who served has a certain type of something that must bring him back and keep him interested.

Dr. MacConnell: One of the most active members of this section, and one of the men who was the most active in the organization of the reserve corps of this State, and a man who, just at the time of our entry into the war, was the most active in organizing the medical men of this State to serve, is no longer with us. I was with him at Carlisle Barracks summer before last and Dr. Dixon was. We noticed then he was frail and feeble, he could not wear the uniform with the uprightness of a younger man, but he was doing his best to continue the interest in the medical reserve work. I refer to Col. John Wesley Long of Greensboro, who has been called from our midst since the last meeting.

I will respectfully ask that you rise for a minute.

(Section rises in respect to Col. John Wesley Long.)

This section is too small entirely. There is a meeting of the Board of Health—section on Public Health and Education—and also of the section on Pediatrics and Eye, Ear, Nose and Throat, and consequently two or three men have had to be excused. Until we simplify the meetings of the Medical Society we will always have these conflicts, but we must first increase the interest among the medical veterans and increase the interest of the younger men to join the medical reserve corps, and in that way we can increase the efficiency.

The meeting cannot adjourn until there is the election of a chairman for next year.

Dr. W. L. Dunn and Dr. J. B. Bullitt nominated.

Dr. W. L. Dunn: I would like to second the nomination of Dr. Bullitt for this office. I am sure that Dr. Bullitt's interest and enthusiasm are going to make it possible for us to have a first class meeting. I move that the nominations be closed.

Moved and seconded that Dr. Bullitt be nominated by acclamation, it having been announced that Dr. W. L. Dunn had already served as chairman.

Motion carried.

Dr. J. B. Bullitt: I was just on the point of rising to make a statement, and I hope you will not think of me as being too hard boiled in saying this. I feel very deeply about one fault that exists in our Medical Society here, in this section as well as the others. Ever since I have been a member, for fourteen years, every section that I have ever attended has been late in beginning its work. If I am to serve as chairman of this section I intend to call the meeting to order on the hour that it is set for, even if there is only one person present. Those who are not present will simply miss whatever is worth hearing. I want to ask all the members of this section to come as promptly as possible, and as far as is in my power I will arrange to have a good program. We will start our section on time and those not present will be the losers.

SECTION ON PUBLIC HEALTH AND EDUCATION

CHAIRMAN: F. M. DAVIS, Canton.

This section was called to order at 10:30 A. M. by the Chairman, Dr. F. M. Davis, Canton.

CHAIRMAN'S ADDRESS

THE PRESENT STATUS AND FUTURE PROGRAM OF THE PUBLIC HEALTH MOVEMENT

FRANCIS M. DAVIS, M.D., Canton, N. C.

When we refer to the Public Health Movement in North Carolina, as to what has been accomplished and may be accomplished, we necessarily mean: What has been done and what may and will be done through the State Board of Health? Nothing worth while has ever been or ever will be accomplished by either the Nation, State or Community, unless it first delegates its power to a limited number who are peculiarly fitted for the task that is to be undertaken.

When Christ was on earth and started the great movement to christianize the world, he did not call upon the entire population of Galilee to go forth and preach the Gospel, but selected the Twelve Disciples, because of their peculiar fitness for the task that was laid out for them to accomplish; and so it has been all the way down through the ages, with all Nations, States and Municipalities.

When any great movement is started, only a few in number are chosen to blaze the way, pre-plan and arrange to put across the work that is undertaken. And so with the Public Health Movement in North Carolina. We have placed the greater part of the burden on the members of the State Board of Health and asked them to undertake and accomplish a work which we, as busy physicians, have not the time to work out in detail and look after. The State Board of Health is the dynamo behind the machinery, the great engine which makes the ship go.

Dr. Thomas Fanning Wood of Wilmington was the first man in the State to point out the possibilities of what might be accomplished by Public Health Work in North Carolina, and it was through his untiring efforts and influence that the twelfth State Board of Health opened its eyes to the light of day, when the North Carolina Board was born in the city of Raleigh on the 12th day of February 1877. When Dr. Wood, through his influence induced the General Assembly to pass the act creating the State Board of Health, he accomplished a greater deed, a more patriotic deed, a more humane deed than did Caesar the Great, or Napoleon, the military genius, when they were leading their mighty armies to victory. This act alone would doubtless place him where he is now, walking the golden streets of the New Jerusalem.

The Board created in the beginning consisted of the entire State Medical Society, which functioned through a committee with an annual appropriation of only $100.00. Two years later the General Assembly

reconstituted the Board of Health, made it to consist of nine members and made an annual appropriation of $200.00. Six members were appointed by the Governor and three elected by the State Medical Society. Dr. Thomas F. Wood was elected the first secretary of the Board, which position he held until his death which occurred August 22, 1892. This is our "Golden Jubilee" or the fiftieth anniversary of our State Board of Health and our Public Health Movement in North Carolina. We started as an infant and on an appropriation on which we could neither stand, crawl or sit alone, but as time passed and our appropriation was increased from General Assembly to General Assembly, our vision broadened, and we began to get a clearer conception of contagious and communicable disease and began to reach out and trace diseases to their real cause; and then trace the lines of communication from the fountain head, or base of supply of germs and disease, to those who were being afflicted, and wage warfare on the common cause of the more prevalent diseases. Public water supplies were provided, sewers were laid, the sanitary closet replaced the open back privy, milk supplies were regulated, anti-spitting ordinances were enacted and all pathogenic, micro-organisms and their carriers were outlawed.

The following important health legislation was enacted:

"An Act to prevent the spread of diseases from unsanitary privies."

"An Act to provide for the physical examination of school children."

"An Act to prevent blindness in children."

"An Act for the prevention of venereal diseases."

"An Act to require the provision of adequate sanitary equipment for public schools."

"An act to obtain reports of persons infected with venereal diseases."

"An Act for the repression of prostitution."

"An Act for the abatement of certain nuisances."

Special campaigns against typhoid fever, hookworm and malaria were put on and so successfully waged as to almost eliminate those diseases from the State.

At the present time the Public Health Movement is endeavoring to protect the health and lives of the people of the State in every possible way, and at the same time carry on a campaign of preventative medicine. Health Departments, with whole time health officers, have been organized in various counties throughout the State. Prenatal clinics, infant welfare clinics, tonsil and adenoid clinics, dental clinics and medical inspections of schools have been established in the counties where we have a well organized health department .

The State Laboratory of Hygiene, through the medical profession, is making diagnostic examinations for the citizens of the State, making water analyses, Wassermann blood tests, examination of sputum for T. B., examination of feces for hookworm and other intestinal parasites and examination of specimens from the throats of children for diphtheria.

The State Board of Health has also placed such biological products as diphtheria antitoxin, smallpox vaccine, tetanus antitoxin, scarlet fever antitoxin, toxin antitoxin and antirabic treatment within the reach of every child in the State. Through the different health departments of the State, typhoid, smallpox and diphtheria, which at one time were such

dreaded plagues, have been almost completely stamped out especially in the counties which maintain a health department, with a whole time health officer.

While the Public Health work has been a great saving to the people of the State in dollars and cents, in the way of preventing and stamping out communicable diseases and furnishing vaccines and biological products to thousands of people, the greatest saving, and the one that cannot be estimated in dollars and cents, is that of human life. The laboratory examinations to determine whether dogs are suffering from hydrophobia, and furnishing antirabic treatment to those bitten by animals afflicted with rabies, saving hundreds of people each year from the most horrible death imaginable, more than pays for all the money that goes to the different health departments of the State.

North Carolina now ranks sixth among the States in the amount of money expended in the protection and promotion of the health of its people.

This State has the enviable distinction of having established the first County Health Department in the United States. It now stands second in the number of such agencies, Ohio having the honor of the first place.

The death rates of the State have been reduced to a point lower than that of the registration area, while our birth rates are higher than the registration area.

The system of protected public water supplies, the enforcement of the sanitary privy law, and the large number of citizens taking the typhoid vaccine have combined to bring the death rate from typhoid fever to the lowest point in the history of the State.

The tuberculosis death rate has been reduced more than one-half in the past ten years.

In the Twentieth Biennial Report of the State Board of Health, from July 1, 1922, to June 30, 1924, we find that the State Laboratory of Hygiene, on an appropriation of $75,000.00, annually made diagnostic examinations for the citizens of the State to a total value of $1,556,-391.80; that is, if the State Laboratory had not been in existence, and the work had been done at current commercial rates, it would have cost that sum.

The diagnostic examinations included analyses of water, Wassermann blood test, and nearly thirty thousand bacteriological examinations, and the vaccine, diphtheria and tetanus antitoxin and antirabic treatment. No attempt was made to estimate the value of the preservation of the life and health which may have been accomplished by this work.

But an accurate financial value can be calculated on the investment made by the State. A cash dividend of $10.37 was made on each dollar of investment.

During the same period the State Board of Health, through its offices and in cooperation with the physicians of the State, gave complete anti-typhoid vaccinations to 281,411 citizens. These immunization treatments, without the activity of the Board, would have cost $2.00 each or a total of $562,822. We find, during the same period 79,533 children were given toxin-antitoxin which rendered them immune from diphtheria, the cost value of which was $238,599.

During the same period, through the same means, 87,727 people were vaccinated against smallpox. The vaccination carried out under the direction of the Board for the prevention of typhoid fever, diphtheria, and smallpox, if paid for by the individuals receiving these protective treatments, would have cost a total of $889,148. We further find that in an effort to control and eliminate fecal born diseases such as typhoid fever, diarrhea, dysentery, and enteritis in babies, 154,600 privies were inspected and the owners required to comply strictly with the provisions of the State sanitary privy law. On a basis of allowing a cost of $2.50, to reach and persuade the average citizen to construct and maintain a sanitary privy, this additional piece of work would cost $386,500. The inspectors were instrumental in securing 8,720 new sewer connections, which, on the same basis, would have a cost value of $21,800.

During the same period 65,341 school children were examined by dentists employed by the Board, and of this number 54,830 received free dental treatment. This included 52,207 permanent fillings, saving that number of permanent teeth. That service, if done at prevailing dental rates, would have cost the parents of these children $274,150.

Examinations were made of 162,014 children suspected of suffering from diseased tonsils and adenoids. Of this number 4,910 were operated upon in clinics conducted by the Board at a cost not exceeding $12.50 for each patient, while about one-half the number received treatment free. So we find a net saving to the parents of these children of $141,363.

In clinics under the directions of the Board there were given 31,494 treatments to persons suffering with venereal diseases, at a cost value of $62,988.

To each and every county in the State, that is maintaining a county health department, the Board is contributing at the rate of $2,500 annually. The total expenditure during the biennium to the different county departments was $493,105.68 and the cost value of the work accomplished was $832,547.22.

For the biennium, the appropriations made by the General Assembly for the work of the Board was $775,000. The Board was able to secure an additional amount of $511,798 from other agencies and has been able to show a return in value of $4,168,888. The dividend paid in cash value to the citizens of the State has been at the rate of $6.03 for every dollar appropriated.

And yet despite all that has been accomplished by our Board of Health and the Public Health Movement in the State, despite the reduction in death rate, in spite of the prevention of sickness from communicable diseases, in the face of the steady progress being made toward the elimination of typhoid fever, diphtheria and smallpox, remembering the decreased infant death rates and what has been done for the promotion of human welfare and happiness, there are still those who criticize. Now and then, in some of the remote corners of the State, we hear some fellow, who does not know what he is talking about, who has made no effort to find out what the State Board stands for and what its work has done for

the people, braying like the jackass that he is, about public expense, and criticizing the State Board of Health and the Public Health Movement.

The future program of the Public Health Movement in the State will have for its objective the elimination of all communicable diseases, so far as possible, a further lowering of the mortality rate and a more intelligent and vigorous citizenship. Then the question arises: How shall all this be accomplished? The answer is by putting on an educational campaign through the general practitioners of the State and teaching the importance of periodical examination of the people, so as to elimate any causes that may exist, which in the future might bring about diseases and death; also to detect any existing disease while in its incipiency, so that it may be cured or arrested before too great an inroad is made, and the victim rendered hopeless. It is only within the last decade that we have fully realized the importance of periodical examination, especially of the school child and the rising generation.

The Public Health Movement with its allied forces will carry on an educational campaign, keeping constantly in touch with research work which is being carried on all over the world, and all the information gained will be promptly passed along. It will reach the general practitioner, the educators in schools and colleges, the students in these schools and, through the students, will find its way into the homes. It is difficult, in our work, to exactly trace cause and effect, but we do know that as scientific knowledge gains a foothold in the home, ignorance and superstition will vanish.

The World War probably did more than anything else ever did, to arouse the medical profession, educators, and the laity, to some extent, to the importance of health examinations for school children, as before that time but little attention was paid the child after he passed the second year of life. The medical examination of our young men during the war revealed a surprising situation in respect to the health and physical development of our people. The report of the Surgeon General of the army showed that more than one-third of the recruits were found unfit for military service, only fifty per cent were physically fit for service in the first line, and a large portion of our young men in the prime of life were found to be physically defective in one way or another. They were below par and suffering from mal-development of various sorts. They showed lack of normal development, and bore the effects of early diseases that had left weaknesses and deformities to the extent that they would be handicapped throughout life.

General Pershing said that the physical condition of a high percentage of our young Americans was a disgrace to any Nation.

When this most surprising situation was revealed, our people became aroused, as never before, in regard to this matter and determined that, if possible, the health and physical development of the rising generation should be improved.

A large number of national, state and local organizations have been formed for the purpose of investigating the health conditions. State and city boards of health throughout the country are awakened to the importance of getting at the causes which made it impossible for so large a proportion of our young men to meet the requirements of service

in the army, and then modify or eliminate those conditions. Had malnutrition, the effects of foci of infections such as adenoids, diseased tonsils, bad teeth and so forth, been generally understood and removed, this physical unfitness could have been almost wholly prevented.

Since studies have been made as to the causes of malnutrition, faulty posture, poor development and mentally backward children, the conclusion has been reached that a combination of conditions enter into the causes, such as lack of home control, improper diet, and faulty health habits, faulty food habits and unhygienic conditions of the school buildings. But the chief causes which are contributing more than anything else are physical defects, such as diseased tonsils, adenoids, dental defects, defective vision and so forth.

Eighty-five per cent of school children have dental defects and twenty to forty per cent have serious defects in urgent need of dental care. Fifteen to twenty per cent of all school children have defective vision to a serious degree. Two per cent have defective hearing. Heart trouble of one kind or another occurs in one per cent of all children. "Inflammatory processes such as adenoids and diseased tonsils, which affect the mental conditions by toxemias, clouding the mind, producing lack of concentration, bringing about early fatigue, poor memory, restlessness and unstable nervous reaction, will appear in fifteen to twenty per cent of any group of school children." "It is from the ranks of such groups of children that the misfits and failures, the physical and nervous wrecks, who make life miserable for themselves and for others, are later recruited."

I know of nothing more important at this time, or where the medical profession of the State could accomplish so much to improve the physical and mental conditions of the future generations, and thereby reduce the mortality rate, as teaching to the people of the rural districts the importance of well established health departments, with a whole time health officer in each and every county in the State, thereby giving the school child the benefit of a physical examination at least once, and if necessary, twice each year. If it should be discovered that a child is suffering from adenoids, infected tonsils, carious teeth, defective vision, or hearing, or any other physical condition that would have a tendency to lower his vitality, retard his growth and development, or hinder his progress in his studies, the parents should be advised as to the child's condition and the procedure which should be followed in order to correct the difficulty, and if necessary the home should be visited in order to see that the recommendation has been carried out. When we are able to see that every child in the state has had the benefit of a physical examination, has had the typhoid prophylactic treatment, that it has been rendered immune against diphtheria by the use of toxin-antitoxin, that it has been vaccinated against smallpox, and so far as possible protected against all other contagious and infectious diseases, then we will have gone a long way towards reaching our goal. In the near future it will be considered disgraceful, if not criminal, to enroll a child in our public schools without having first given the child the benefit of a physical examination to determine if he is suffering from any physical defects, and to correct such defects, if any be found.

"What shall it profit a child if he gain the whole world of knowledge and lose his own health? What shall it profit the State if its children are provided with information, but lack the physical health to make use of that information?"

Just a moment before closing, and I am sure that you will pardon a personal word. I am a general practitioner of medicine, living the life of a doctor of medicine, going in and out of the homes of the people, and in daily intimate contact with the inner lives of our people as is possible only by one class of the many branches of our great profession, the general practitioner of medicine. I make this appeal to you in earnest desire to uphold in all sincerity and truth the time-honored tenets of medical men in being daily wise counsellors and helpful leaders of the masses, who have only us to look to for guidance in matters of health. Again let me urge upon you that at this, the fiftieth anniversary of our State Board of Health, we are more nearly approaching the goal desired and dreamed of by our forefathers, and that you redouble your efforts to advance the health interests of North Carolina.

Financially minded men who may be either specialists or general internalists in the practice of medicine should carefully consider what it means to be fitted to properly make from time to time examinations of our clientele, to the end that they may be better prepared and fitted to anticipate and to cope with organic tissue or mental degenerations which are liable to restrict or hinder future healthful activities. In other words, gentlemen, let us bear in mind that the financial rewards, to put it bluntly but practically, to be acquired by the capable practitioner will prove more gratifying and of equal remuneration in making periodic examinations than it has formerly been in treating acute preventable pathologies.

In conclusion, let me repeat that if we progress very much further with our public health movement, if we accomplish very much more in the future than we have in the past, we must do it through our attention to the children of the State.

"There is really no clue by which we can tread our way through the mazes of culture and the distractions of modern life, save by knowing the true and natural needs of childhood and adolescence. Childhood is thus our pillar of cloud by day and fire by night. Other oracles may grow dim, but this one will never fail."

DISCUSSION

Dr. G. H. Macon, Warrenton: Matters of this kind should be broadcast throughout the State, and I see no other way to educate the public other than to have this class of papers published through the press of the State.

This really is the best way to reach the public. We are a reading public now and I should like to see this paper in print.

I make the motion that this paper be submitted to the press.

The motion was seconded and unanimously carried.

GUILFORD COUNTY'S PROGRAM FOR ANNUAL EXAMINATION OF APPARENTLY HEALTHY PERSONS

C. C. Hudson, M.D., Health Officer Guilford County, Greensboro.

Before considering the program of the Guilford County Medical Society for the promotion of annual examinations of apparently healthy persons, we may first pause for a few moments to consider a few of the things which have been accomplished along this line.

People from earliest times have looked upon the physician as one to heal the sick. The profession has always considered this to be its principal function. Our conception of what constitutes illness has undergone a gradual change as medical knowledge has increased so that we are now able to consider as serious ailments conditions which would once have received scant attention from the profession. Examinations made by physicians in connection with applicants for military service, annual examinations of school children and especially the examinations made for life insurance policies, have revealed an enormous amount of disease which needs medical care. Measures which may be used for the prevention of disease such as vaccines have also increased and there has been a decided increase in our knowledge of proper foods and what really constitutes healthy living. Thus the profession has become fitted to really teach people how to keep well.

Dr. Bodell of England first advocated examinations of apparently healthy persons in 1860. In 1914 the Life Extension Institute was organized, principally by a group of men interested in life insurance, and began making examinations, largely of policy holders of certain insurance companies. Research work was carried on for nine years and the results summarized. The results in the reduction of death rates were so striking that many other insurance companies have united with the original companies to push this work.

The promotion of annual examinations of apparently healthy persons has now been made a part of the program of the American Medical Association and an examination blank and very definite instructions in regard to making the examinations have been issued by the Association. During recent years there has been quite a tendency among our specialists to advise their patients to return at definite intervals for re-examination. The eye specialists are always careful to instruct patients having their eyes tested to return in a year or two years for a retest. Our dentists are always careful to instruct their patients to come back every year for examinations. If certain parts of the body need looking over, why not all of it?

In making a complete annual health examination as outlined by the Committee of the American Medical Association requires time and much work. The first part of this examination consists in sizing up the individual and finding any diseased condition. If any focal infection exists, it must be found and corrected. Any unhygienic living conditions must be discovered and advice given as to their avoidance. If the individual is overweight, is eating improperly, not taking enough exercise, or doing other things which will shorten his life, must be found out when examined

and correct advice given. In addition, the examiner must be prepared to administer the different vaccines for the protection of the individual. The physician who starts out to do these examinations must first fit himself to give a complete examination and then be able to instruct the patient so as to correct the conditions which he finds. It is worth as much to the patient for a physician to find out and correct improper living habits as it is to have diseased tissue removed. When people have been taught the value of these examinations they will be just as willing to pay for them as for an operation.

In 1922 the Guilford County Medical Society started what is believed to have been the first work for the promotion of an annual examination of apparently healthy persons in the State of North Carolina. Several addresses were made in different parts of Guilford County at that time. This was perhaps the first organized work along this line by any Medical Society in the United States. The work was allowed to lapse, however. Nothing further was done until 1925 when a committee on annual examination of apparently healthy persons was appointed. This committee was continued during 1926 and in the latter part of the year a definite program of work was arranged.

In planning work along this line, it was thought best to have a series of meetings for the discussion of the work. It was decided to follow the outlines and recommendations of the American Medical Association bulletin entitled, "A manual of Suggestions for the Conduct of Periodic Examinations of Apparently Healthy Persons." In making the examinations we decided to use the examination forms supplied by the American Medical Association. The following program was arranged, the lectures and demonstrations following the outlines of the bulletin:

OUTLINE OF REVIEW COURSE IN PREPARATION FOR ANNUAL HEALTH EXAMINATION. GENERAL PLAN OF STUDY

1. Tuesday, January 4, 1927, County Court House, Greensboro, N. C.
   (a) History ..... Dr. D. W. Holt
   (b) Physical Examination ..... Dr. Harry Brockman
2. Tuesday, January 11, 1927, Municipal Bldg., High Point, N. C.
   (a) Eye, Ear, Nose, and Throat—especial emphasis on use of otoscope, visual test and use of opthalmoscope, and advice in reference to tonsil removing ..... Dr. C. W. Banner
   (b) Orthopedic defects, with especial attention to posture and feet ..... Dr. W. F. Cole
3. Tuesday, January 18, 1927, County Court House, Greensboro, N. C.
   (a) Rectal examination and Genitalis ..... Dr. E. F. Long
   (b) Dental defects—pyorrhea, etc. ..... Dr. J. S. Betts
4. Tuesday, January 25, 1927, Municipal Bldg., High Point, N. C.
   (a) Chest Examination—Lungs ..... Dr. J. L. Spruill
   (b) Chest Examination—Heart and circulation ..... Dr. F. R. Taylor
5. Tuesday, February 1, 1927, Court House, Greensboro, N. C.
   (a) Examination of skin lesions ..... Dr. R. E. Perry
   (b) Significance of nervous reflexes ..... Dr. J. W. Taylor

6. Tuesday, February 8, 1927, Municipal Bldg., High Point, N. C.
   (a) Advice in reference to diet, nutrition, overweight, underweight, alcohol, tobacco ..... Dr. W. M. Jones
   (b) Advice—Personal hygiene ..... Dr. C. C. Hudson

All meetings began at 8 p. m.

The meetings were fairly well attended, the attendance varying from twelve to thirty with an average attendance of about twenty out of the total membership of approximately 110. While this attendance was nothing like ideal, it showed an interest on the part of several members of the profession.

A few physicians had already started giving examinations. The number examined has not been very great, but we believe as we push the further part of our program that this number will show a decided increase, especially among the more highly intelligent class of citizens. A few addresses have been made before public gatherings on the value of an annual physical examination, but this part of the program has only begun.

We hope in the near future to put on a very active public campaign showing the value of having an annual complete physical examination. This will take the form of addresses before clubs, public meetings, moving pictures and exhibits. We realize that it will take several years to really train our best people to have this work cared for in an organized manner, but as it is exceedingly valuable, we feel that it will show results if we keep pushing it.

DISCUSSION

Dr. Harry L. Brockmann, High Point, N. C.: It has been definitely proved that life can be extended by these periodic health examinations. There is no question about that, but as Dr. Rankin says, it is going to take a great deal more of interest on the part of our physicians before any great good comes. This matter is not gaining great popularity with the profession. The reason for that I think is due to the nature of the work. It requires a great deal of patience which the average practitioner does not have.

We find today a tendency toward standardization in everything. We have the oil heater that automatically heats our house. We have the automatic music machine which when set in motion will play an hour's concert for us. It has almost come to the point where we must have automatic health. In this regard I refer to the subject which was presented by the doctor who has just spoken, namely, the Life Extension Institute. It is a mail order house for public health and should be heartily condemned by our profession. I have in my hand a letter from the International Health Institute, an organization similar to the Life Extension Institute. If you will pardon me I will read it to you: "You have been very highly recommended to us as a physician capable of upholding the strictly ethical requirements of our institution. It is our intention to establish a resident physician and member of our advisory and hygiene reference board in your community. You are herewith invited to apply for this appointment. Briefly our plan is this: To physicians qualifying as resident consultants, we will allow a fee of $3.00 for

each examination of subscribers to our health extension service, who are assigned by us to visit the resident physician in their community, for examination, medical advice and counsel at periodic times during the term of their subscription. The thorough physical examinations rendered subscribers by our associate physician does not include the periodic urine analyses as these are conducted from the head offices. This affiliation will not interfere with your regular practice and should add materially to your income and prestige in the community. In addition the inauguration of our expansion program, calling for a tremendous advertising campaign, national in scope, will secure for you the highest type of ethical publicity. It is understood, of course, that we will cooperate with and conform to all splendid standards. Our work is purely constructive and educational. A reflection of the great good accomplished is shown by the five hundred thousand membership of a similar organization—a membership created during a relatively short period of existence. We cooperate in a tangible way with ethical physicians only, and to those approved and appointed as resident physicians and members of the Advisory and Hygiene Reference Board, we extend an unusual opportunity. Your acknowledgment is requested on the enclosed, with a brief summary of details concerning yourself. Upon receipt of same we will advise you of appointment or rejection and furnish all additional data."

I want to say in self-defense that these same complimentary terms were applied in similar literature to many other physicians in this very audience. The application form calls for information concerning myself, and a promise to uphold certain policies that this institute advocates. I wrote the American Medical Association for a report of its investigations of the International Health Institute and received the following reply:

"The 'International Health Institute, Inc.' is at present, it seems, nothing more than a paper organization. It has for its President one Charles Berminster Munro, who used to be with the Long Beach National Bank at Long Beach, Long Island. Its Vice-President is J. C. Lipsey, who is said to have been employed in an executive capacity by A. W. Hyde and Co., Inc., 2061 Broadway, New York City. The Secretary is Gerard Warren Proctor, who is assistant sales manager of A. W. Hyde and Co., Inc. The Assistant Secretary is George W. Smith, whose antecedents we know nothing about.

"Although we requested the International Health Institute, Inc. to give us the names of the incorporators, this request was not complied with. We have learned, however, that the incorporators were Josephine Applebaum, Thomas LePetri and Amelia Decker. These three individuals, apparently, were mere figure heads, whose names were used by the attorney for the International Health Institute in order to comply with the state law requiring three adult residents of the State of New York to sign the papers of incorporation.

"The concern states that it intends to render a service similar to that of the Life Extension Institute, with four quarterly physical examinations and four urinalyses, 'supplemented with a complete course in body building and rules of right living.' They state that they will pay a fee to regular registered physicians to make physical examinations, and we

believe that the fee they offer is $3.00, which of course, is hopelessly inadequate for any physical examination that is worth while.

"As you know THE JOURNAL has taken the attitude for some time that there is no good reason for the existence of these various concerns that sell a urinalysis service, together, in some instances, with a physical examination. The proper person to do such work is the family physician, to whom the patient will be a human being and not a number. The physician who is familiar with the individual and his idiosyncrasies is in a position to give really valuable service in periodic examinations. The service that one gets from commercial concerns that are in this line is, even when honestly given, of indifferent value."

We cannot blame the American Medical Association for getting out the pamphlet as it has done. It is high time that that should have been done. The pamphlet answers for itself and needs no further comment. This work requires a personal relationship between the physician and his applicant for health, or his applicant for the cure of disease. It is only the physician who has his patient's personal interest at heart who is a successful physician. This attitude is necessary for success in any line of work. Observe the men whom we have elected to offices in this Medical Society. Can you recall any who has not given himself unreservedly to service?

A great many new movements and ideas have been initiated in health and medical work. Some of them roll along for a certain time and are then discontinued. Others grow in use and value as they roll. It remains to be seen whether we are going to accept this opportunity to make periodic health examinations to render a great service to our fellow men or whether we are going to turn it down merely because it is a little bit more difficult and requires more patience and is more irksome than the work that we are doing and the work at which we make our living.

I made a statement at the last meeting of this Society that medical and health work could support a great many more doctors than we now have. I made that statement on the ground that if a majority of the people applied regularly for these periodic health examinations, there would not be doctors enough in any community to serve them. Most of us are busy all the time and cannot devote a great deal of time to this work. This is one problem that will have to be solved sooner or later provided the public comes in for these examinations—the problem of securing enough physicians to serve them properly.

DR. R. L. CARLTON, Winston-Salem: I believe the gentlemen have confused the work of Life Extension Institute and this other institute that proposes to examine patients for a fee. I think that thing should be very highly condemned. We do not want to make this examination for $3.00, and it is strictly a commercial thing, whereas the Life Extension Institute is not. They are two different propositions entirely.

DR. BROCKMANN: I merely read from the letter of the American Medical Association its report on the International Health Institute. If any one wishes a report on the Life Extension Institute which is classed in this report as a similar organization, I would refer them to the A. M. A. I would further call attention again, as I did last year, to the

fact that we have in the A. M. A. a reliable source of information regarding many things and we should call upon it frequently.

Dr. C. C. Hudson, Greensboro (closing): In regard to the fee for these examinations, that is purely a matter for the physician to determine according to his patient's ability to pay. That is purely and simply a matter of personal relationship between the family physician and the patient. These people will come to you as patients. That is one reason why we public health people always handle this only in an educational way. What we will probably do will be to act as promoting agents for the medical profession because we realize that that is the highest type of service. After giving a thorough examination, you are in a position to advise that person what to do, and he should prove to be a good patient for you for several years. He should realize that that will probably add several years to his life and should pay just the same as for any other examination.

SOCIAL MISFITS AS SEEN BY THE ALIENIST

By L. G. Beall, M.D., Black Mountain, N. C.

At the present time much is being written and spoken about the misfits in society. It is quite probable that I shall be unable to say anything new upon the subject and I doubt not that much which I shall say is now familiar to many of you. However, the rapid increase in the number of those who are unable adequately to adjust themselves to their surroundings, shown by the increasing number of those mentally ill; by the rising tide of crime and by the present social unrest, forces this question upon our attention.

The study of these individuals involves economic, social, educative and medical factors. The problems presented are in education, in morals and religion, in general social relations, in law, in psychology and in medicine.

To discuss the problems in all these fields, or even in one of them, fully, would require more time than we have at our disposal. Therefore, I shall endeavor to limit my remarks to the study of these individuals as they touch the field of medicine, primarily, and of education as it is correlated to medicine. We will not discuss the frank psychotic cases except so far as to inquire into the early tendencies toward a psychosis, nor will we discuss the organic mental diseases.

One of the most important facts we have learned about mental diseases is that these misfits are individuals who have failed to adapt themselves to some problem of life. Mental disease is an expression of maladjustment. In most cases it is compromise representing an effort on the part of the individual to meet demands which are too great for him.

The failure to meet these demands may be caused by the lack of mental stability which we call heredity, or by lack of proper training due to an unfavorable environment. The child tends to inherit every attribute of the parents, so if the parents or grand parents have had an unstable nervous system, the child inherits a tendency towards an unstable nervous system. Whether that tendency becomes a fact or not depends to a large extent upon the environment. Heredity is the foundation upon which the

environment erects the super structure. If the foundation is broad and strong, the structure may be tall and stately, ornate and beautiful. If the foundation is weak the structure must be limited and adapted to that foundation. To attempt to place a heavy building upon a weak foundation is to invite disaster.

Heredity gives to each individual certain personal peculiarities or characteristics of mind that are forceful in determining what the permanent emotional attitude shall be. These tendencies and characteristics, given by nature, are being perpetually energized, antagonized and changed by the physical, social, intellectual and moral forces of the environment. We know that these personalities show tendencies so characteristic of the different forms of mental disorders that they indicate that form of mental disease to which that person is especially liable. We also know that the symptoms shown in a period of mental illness are in many instances but the exaggeration of these normal tendencies.

Only recently have we come to realize that childhood experiences determine the future of the individual. It is in childhood alone that we can hope to correct bad tendencies. It is during childhood and usually during the first seven years of life that the character is formed. It is at this period that the child develops in physical, mental and social directions. Born without habits but with certain instincts he gradually develops muscular co-ordination, learns to sit alone, to walk, to talk, to eat, to play. The sensations become acute and localized. He learns conscious sphincter control and suitable habits of sleep. He gradually develops in intelligence, learning the names of objects about the house and their uses; begins to understand abstract ideas; learns the letters of the alphabet and learns to read.

He learns something of his relation to the people about him. He finds there are certain natural desires and instincts that he has to control because their gratification at the instant of their appearance brings him in conflict with laws, customs, conventions and morals. He finds that his will cannot always be supreme. He learns to recognize property rights. He learns to give and take in his games and play. He learns obedience, self-control, patience, forbearance and kindness. Or he does not learn these things and thereby becomes a misfit.

Unable to adapt himself readily to changes in environment he may become reticent and seclusive and absorbed in his own thoughts and interests. Overwhelmed by the responsibilities and requirements of life he may attempt to withdraw entirely from the world of reality by creating a new and imaginary world in which he can live in greater comfort. He may become conceited and selfish, easily offended, feel that he is not fairly treated and that he is not given an equal chance in life. He may even develop the stronger and more fixed delusions of paranoia. In fact he may develop any of a number of other symptoms by which we recognize maladjustment.

We hear him spoken of as a nervous child. Nervousness is an indifferent term and has many meanings. It may mean worry, fear, restlessness, sleeplessness, nightmare, tantrums, moodiness, morbidness, anxiety, twitchings, spasms, weakness, brooding and despondency.

A nervous child may be a physically ill child; a backward or retarded child; a spoiled child, or a child with some inward emotional conflict.

Records show that about sixty per cent of school children are undernourished, anemic, or have bad tonsils or some other physical defect. The body being ill the mind suffers with it.

Feeblemindedness has been held responsible for much of this lack of adjustment. There is a prevalent idea that all morons are potential criminals. Yet it is interesting to note that it was the moron and not the marine who won the war and who probably constitutes nearly one-half of our population. Forty-five per cent of the soldiers did not test above the twelve year limit, showing what is probably a true cross section of the nation. The truth of the matter is, a moron is not necessarily feebleminded, although he may be child-like. By proper education he can and does become a very useful, happy and contented citizen.

The problem of the moron is the problem of education. Until recently, standardization has been the aim and goal of our educators, and we have insisted upon the same forms of study for all children. The moron is unable to generalize, to handle abstract ideas or to use general principles. This is why we have turned out of our schools boys and girls who not only could not earn a living, but who were discouraged and disheartened and oftentimes disgruntled and anti-social. Can we wonder that they become delinquent and criminal?

The spoiled child usually comes from a home in which there is either too much discipline or too little. He may be imitating his restless, complaining, selfish, unstable mother, or he may be worried by a scolding, autocratic, domineering and perhaps alcoholic father. This maladjusted child has a record of tantrums, malicious behavior, stealing without intent, pinching, striking, spitting at other children, vagrancy, incendiarism or sex perversion. He represents an ever increasing problem to parents, teachers and social agencies. He is frequently labeled a psychopathic personality, indicating an emotional instability in the formative period of childhood, or perhaps a borderline case, meaning a case that falls just short of being a frank pyschosis, or a case of post encephalitis, a term embracing all manner of abnormal mental manifestations in the emotional and volitional spheres.

A restless, fussy, dancing mother cannot expect a quiet, demure daughter who will obey her orders to stay at home. A gambling, swearing father cannot expect a different sort of son.

We have learned to make much of conflicts as a source of nervousness. Conflicts which arise because of the variance between the practices of parents and their teachings; conflicts between the ideals of childhood and the sordid realities of life; conflicts between fancies and actualities; between normal instincts and desires and their lack of fulfillment.

I bring these thoughts to the attention of the physician because he should acquire as a part of his professional approach to any disease, insight into the domestic, social and business relations of his patient and his reaction thereto. We can make small progress until the medical profession as a whole realizes its responsibilities to the public for the prevention of mental illness, which, one of the Mayos has said, causes more suffering than all physical illness put together.

I do not want to take up too much time, but perhaps one or two case histories illustrating some of the points I have tried to bring out in this paper may be of interest.

"Case one is of a youth of twenty-one suffering from a psychosis of acute onset, characterized by a period of excitement alternating with a stuporous condition in which he was mute, immoble and with eyes and mouth closed. He had to be forcibly fed and suffered from hallucinations. History showed the patient to be second in a family of four children. The mother was a normal, attractive woman but overindulgent to her children. His father was a brilliant man, keen and intellectual, who dearly loved discussions. He was proud of his children, ambitious for them and pushed them forward. Patient passed an uneventful childhood and as a youngster was considered normal. He was athletic but somewhat timid. At sixteen he began to do badly in school, for which his father took him to task very sharply. His interest lay in athletic lines and in the field of mechanics, but his father insisted on his attempting classical studies. He developed a sense of inferiority and finally a breakdown came. He was permitted to leave college and took a long motor trip, on which he worked at times, and returned apparently well. His father then again attempted to push him into a classical field and his acute upset followed immediately."

"Case two is a boy of eighteen suffering from severe panic. Combative, difficult to manage and in a state of acute excitement. He was talkative, mischievous, and general psycomotor overactivity. He developed without special interest to the age of puberty and did well until his father precipitated a psychosis. Father was nervous, over serious, never had learned to play; maintained over his children a constant nagging oversight. Patient from childhood was headstrong and in more or less constant dissension with his domineering father. Every attempt made to get away from home or develop a field of independence was blocked by the father. He became rebellious of all discipline and his acute breakdown followed."

Case three is a young woman thirty-nine years of age, married at age twenty-four and had one child which died soon after birth. Nothing of interest in her history until after the birth of this child. She married a man who was dominated by his mother, who was always protected, not allowed to mingle with boys, or play any games and was known among his schoolmates as a "sissy." Upon marriage this young couple went to live with the husband's mother, and she continued to dominate the situation. The young woman seemingly was attractive, pretty, agreeable and to all intents and purposes normal until she began to break under the constant nagging of her mother-in-law. She developed constant complaints of eye strain, headaches, backaches, became incapable of performing any of her household duties, and was fast being made into a confirmed invalid. For three years she was unable to walk across the street. X-ray of the back, upon explanation, proved to her there was no organic condition to account for her pain. An abscessed tooth was removed. Slight muscle imbalance and some astigmatism were corrected by glasses. Her defense reaction to the situation was fully explained to her and she is now living a normal life and supremely happy in her recovery.

In case one we have the disastrous effect shown by the dominating, domineering attitude of a father.

In case two we have the result of the parent not allowing the child to develop along the line of its own natural traits and abilities.

In case three we have a young woman who was forced into a defense reaction of illness in order to maintain, as she thought, her proper place in the household and to get the amount of attention which she thought was her due.

Prevention is always better and cheaper than cure. Parent, teacher, preacher, psychologist, social worker, the judge on the bench, and especially the physician, should study these problems to the end that all may work together towards a better mental condition of the nation, a happier and more contented people, a people better able to cope with the ever changing conditions of a life which is becoming more and more complex and which is making ever increasing demands upon the nervous and mental strength of the individual.

CRIME AS A MEDICAL PROBLEM

By Jas. K. Hall, M.D., Richmond, Virginia.

Man is perhaps the most responsive of all living things. Portions of his central nervous system, known commonly as the special sense organs, are pushed as far away from his brain as possible and as far out into his immediate environment as is compatible with their safety. They are his aerials, so to speak, his antennae. These far-flung extensions of his sensory nervous system pick up information about the world around man and pour it into his brain. These in-pouring impulses are the first things in the way of knowledge. From them are derived sensations, and out of the development of sensations and their association with past experiences fully developed conscious life is made possible. From the central nervous system another network of fibres pass out to the muscles, and along these motor fibres impulses are reflected which result in movement. Through this latter mechanism man responds to his surroundings, and becomes a moving creature. Thus he is a sentient being, who feels and comprehends his environment, and through his movements his responses to that environment are made known. His sensory apparatus enables him to feel and to know; his motor mechanism makes it possible for him to move, to change his habitat, to ward off, to apprehend—in short, to impress himself upon the world around him. Thus we have in briefest possible outline a sketch of the nervous system—that wonderful apparatus by means of which man is made conscious of the universe and by which it is possible for him to attempt, at least, to adapt himself to it.

And this reaction of the living thing to the neighborhood is what we mean by behavior. The individual may be unconscious of the process, as in early infancy, in sleep, and in stupor. The responses may be instinctive, known or unknown to the individual. Behavior may be involuntary—carried on without reference to the will. It may be highly voluntary—a majestic and dignified expression of the will. But whatever man's behavior may be, instinctive or acquired, involuntary or voluntary, wise or foolish, hurtful or helpful, benign or malignant, it portrays to the world in unmistakable terms the personality of the individual. It must be a psychological fact that every idea, big or little, begets some kind of movement. The muscular response to the ideation may be gross, as in

physical labor, or small and hidden away, as in the change of the size of the pupil, the quickening of the heart's action, or in the deepening of respiration. But, as the man thinketh he behaveth, and by his behavior he is known.

Long before consciousness makes itself known certain instincts are active in their beneficent work of protecting and developing the individual. The instinct to live causes the babe to search for and to grasp the nipple; the same instinct causes the speechless little one to convey into its mouth all small detached objects in the blind hope that they may be nutritious. But with the development of consciousness troubles come—self-directed activities come into conflict with instinctive trends, with customs, conventions, morals—and life's warfare is on. The natural tendency must be in the direction of unhampered responses; instinct is, I assume, ethically neutral. I am unable to conceive of instinctive behavior as moral or immoral. It is, and no more. To be perfectly natural must mean to be perfectly free and unrestrained in every response to one's environment. To be civilized is to be enabled to understand that all reactions cannot be exhibited. To be cultured means that most of man's primal impulses must be repressed. Savagery implies expression; civilization implies repression. Individuality asks for free expression; the herd-instinct calls for certain repressions. A conflict arises. Consciousness has developed; modifications of natural behavior have arisen; personal civilization is being born; law has come into existence; customs, conventions, morals, codes, and standards, have come as helps or as hindrances.

Certain violations of behavior constitute crime. The very word crime is interesting. I think it comes to us out of the Latin, but still more remotely from the Greek. In ancient days the root of the word, it seems to me, carried with it the suggestion of a sieve—a mechanical contrivance by which some things were separated from others. And so in our modern life the law is that sieve through which behavior is run. We might assume that those particles of conduct too coarse and gross and irregular to pass through the meshes of the sieve are crimes. But in sitting in judgment on the operation of the sieve man displays his usual egotism. He exercises what he chooses to call his discriminating sense, and he calls unhesitatingly this act of his neighbor good and that act bad. But whether this be true or untrue depends, we know all too well, upon the soundness of the judgment of the judge. It depends, to speak mechanically again, upon whether the sieve be made right or wrong. And the very existence of crime necessarily implies, it would seem to me, the existence of a minority and of a majority. Only a minority can commit crime; only a majority has sufficient force to enable it to catalogue behavior as good or as bad. Crime is committed always by a minority. A rebel is a member of a minority. A number of rebels sufficient to bring an overthrow resulting in success establish a new code of behavior. This new standard of behavior which had been wrong then promptly becomes right. The recent minority become the law-makers. Prior to Yorktown George Washington, from the British point of view, was a criminal; after that date he became a patriot. The Londoner of today looks upon his monument. Sufficient additions to the numbers of the minority transform

it into a majority. Thus the acts formerly criminal become of good character. What was wrong becomes right; what had been right becomes wrong.

Crime is conduct so unsociable as to be thought worthy of punishment. The mere existence of crime bespeaks likewise the co-existence of some degree of civilization. In the most primitive society there can be no wrong and no right save that of mere brute force and might. In more enlightened society a social conscience exists and to this community-censor bad conduct is objectionable. In legislative assemblage conduct of the bad sort is catalogued and stigmatized, and those who engage in it are thought to be unworthy citizens, destructive to the group-organization, and their disintegrative tendencies are warred against by statutory enactment. The herd must be preserved even though the individual be made to suffer or be sacrificed. The very arbitrariness of the conception of criminal behavior attributes to the majority—the law-making body—an enormous degree of omniscience. The word crime of itself implies a clash of human opinions—a difference in judgment of two or more individuals about the quality of an act. Condemnation of the statutory kind calls for the existence of a larger group, sitting in solemn session in disapproval of the behavior of the smaller and the weaker group. In warfare individual rights perish; in warfare international law disappears in the clash of nation against nation.

And what, after all, is the essence of the particular type of behavior called criminal? Does the stigmatization inhere in the mere mechanical movements of the human physical apparatus? Is it the simple flexion of the index finger that brings about the explosion resulting in the release of the winged leaden angel of death? Or must we believe that in the destructive state of mind back of the bending finger lies that sinful state called murder? After all, is punishment inflicted because of the perpetration of an act, or because of the unsocial state of mind back of the act? I fear that I may be leading myself into waters whose depth may be above my nostrils.

I am unlearned in comparative psychology and I am unable, therefore, to assert that man is perhaps the only animal able to comprehend his own behavior. The playing puppy, the frisking kitten, the frolicsome lamb, and the carolling mocking bird are probably only yielding to impulses which they can neither understand nor modify. But the mental mechanism of man, out of which all his behavior flows, carries concealed in it somewhere the ability to initiate, to comprehend, to modify, and even to suppress the very conduct which it liberates. It may be true that only the mind of man can contemplate itself.

Man entertains the hope that he may have hidden away in his higher faculties at all times the ability to modify his own conduct so that it may comfortably and without friction interdigitate into the conduct of the members of the group around him. But is that statement always true? Are we surprised to discover that harmful and destructive maladjustments are not infrequent? Is it possible for us to conceive of man as so omniscient as to enable him to know always that the welfare of the group is his welfare: that selfishness is both hurtful and sinful: that many of his instinctive trends are self-destructive in tendency: that his highest effort

must be to sustain those forces that protected him in infancy, that shielded him in adult life, and that stand guard over his property even after his death? If we are able to conceive of man in such fashion are we able also to think of him as endowed with the inflexible purposes and the necessary power to carry into successful action all his highmindedness? All these myriad adjustments man must make without bringing about serious clashes with his neighbor or with his neighbor's goods, otherwise man has become a criminal.

It must be a fact easy of substantiation that man is most ignorant of the familiar facts of life. It is undeniably true that we medical men know least about those diseases that we encounter most frequently. In the list are measles, mumps, and chicken pox. We should not think it strange, therefore, that we are rather profoundly ignorant of the fundamental facts of human behavior. We scarcely know what the phenomenon is. Instinct, the earliest exhibition in life of activity suggestive of conduct, is still a mystery to us. What is instinct? May we think of it as "the faculty of acting in such a way as to produce certain ends, without knowledge of the ends, and without previous training in the performance of the acts which lead to those ends"? The yearling bird builds such a nest as those of her kind have built for ages, yet she has had no instruction in the complex and delicate fabrication. The twenty-four-hour-old chick, just released from the utter darkness of the incubator, makes perfect use in the brooder-house of the water, food, and heat placed there for its welfare. Instinct remains perhaps the only guide the lower animal has for its development, protection and perpetuation. Yet the perfection of the activity of this mysterious quality is attested by the fact that most species have survived throughout the ages in spite of man's warfare against them, and in spite of their warfare against each other. Contrary to general opinion man is abundantly supplied with instincts—much more generously, perhaps, than any of the so-called lower animals. Education can do for man probably no more than to enable him to develop certain instincts and to modify or to repress others. Our instincts are our natural selves; all other manifestations of conduct represent the acquisitions or the impositions that have taken place throughout the aeons of man's ascent out of the lower animal world.

My own belief is that man experiences relatively little difficulty in adjusting himself with tolerable satisfaction to the material world immediately around him. He can care for his physiological reactions to heat, to cold, to darkness, to light, to existence high in the air, and to life deep down in the earth or in the depths of the waters. Man has learnt, as a rule, to bear with commendable equanimity the loss of loved ones and of his material possessions. He fights, sometimes he surrenders, and he dies when necessary. I am convinced that man's struggle with matter is not his chiefest concern. Man experiences most difficulty with the world within himself and with the opinions of his fellowman. Abstractions, not matter, bother him most. In adolescence, especially, the chief troubles are with his inherent instincts. Most of the acts that we would instinctively, and therefore most easily perform, are not countenanced. They are frowned upon. The youngster is driven, therefore, to the necessity of replacing one kind of instinctive behavior by another, or else to the

attempt to suppress entirely such behavior. Instinctive urge that cannot be repressed or deflected gives rise to the commission of much crime—crime against the person of another, and against the property of another. In such unsocial behavior the inhibitory faculty works poorly. Individuals who make assaults upon the person of another, as in sexual attacks, and as in fisticuffs, have not escaped from the dominating influence of primal instincts. The mighty battles of the world have not been fought upon military fields, but they have taken place within the mental life of individuals. The conflict has been between the urges of primitive instincts and the forces of so-called civilization. Fighting is instinctive, and for that reason wars will continue to be fought.

Next to the difficulty that man experiences with himself is the trouble that he encounters in adjusting himself to the mental states of his neighbors. Herein the chief trouble in living lies. We are all ignorant, prejudiced, superstitious, covetous, intolerant, and tyrannical. We are anxious to acquire the goods of our neighbor and to bring him under the tyranny of our own thinking. The origin of much law lies, I should say, in the desire of some individual or group of individuals to exercise tyranny over the mental life of others or to gain possession of the property of other individuals. Abstract principles may not be so influential as we might imagine in the formulation of laws. It cannot be otherwise. The instinct to live makes it so.

I continue to think about crime, even if I be not continuously talking about it. The universe is infinitely more spacious and complex than ever before. We are called upon constantly to react to things that our fathers knew not of. The racial past is ever enlarging and it is a large factor in the mental life of every thoughtful person. Myriad mechanical contrivances, inconceivably complicated and undreamed of by our ancestors, have become necessary curses in our daily lives. Our lives have been motorized and mechanized so that individually we come into contact with an increasing number of people. Not infrequently we come into collision with others. Our movements are hurried. Laws have multiplied even more rapidly perhaps than mechanical devices have increased in number. Man is now troubled, if not actually hampered, by many of these legal enactments. The behavior that was formerly in good standing has, in many instances, been made lawless simply by legislative fiat. No longer can man eat or drink what he will. No longer can he use this or that side of the roadway in his travels. No longer is he able to exercise absolute authority in the rearing and the education of his children. Modern man lives encompassed round about by legal restrictions and annoyances. Most of his individual freedom has been sacrificed for the good of the herd. It has been a sorry trade.

Have I dwelt long enough and comprehensively enough on the difficulty of living in these latter days? In comparison dying is easy. Do you wonder at the failures in this high art of living? Do we not have to turn our gaze away from the human wreckage strewn alongside the roadway that civilization has traveled? I do not know what civilization is, but I do know that the demands made by it call for enormous sacrifices. Our modern life is filled with deceptions, hypocricies, pretenses, bravadoes, insincerities, poses, dramatizations that bring blushes to the face of

Truth herself. I see individuals trying to live high social lives for which they have no fitness in wealth, attainments, or in temperament. And I see others trying to practice a profession for which they have neither inherent capacity nor acquired training. And everywhere around me I look upon human beings standing on tip-toe in a vain effort to reach up to the demands of the conventions and customs and standards of these unhallowed times. And in such strained positions these poor humans grow weak and faint. Is it any wonder that some of them become insane, that some of them become criminals, that others become derelicts, paupers, dependents—and that a multitudinous host resort to the use of drugs or liquors? In this group of addicts we find those who are looking in vain for strength from sources outside themselves, and here we find also the myriads who are either unwilling or unable to live their lives in the prosaic world in which fortune has cast them. Many of them are attempting to replace the world of reality with a world of unreality, projected from their own brains—a world as they would have it to be, but as it can never be. Primitive human life probably knows nothing of such failures and tragedies and disorders. They are the products of what we call civilization and culture. Is civilization worth what we pay for it? Have we not been bit in the trade?

The use of figures must often be resorted to for the purpose of giving concrete examples. The Commonwealth of Virginia has a population of a little more than two and a quarter millions. North Carolina's population is somewhat larger. Certain disorders of conduct must be taken notice of by the law. In the fiscal year 1926 there were committed to the jails in Virginia 32,075 prisoners. In that year 890 were sent to the State penitentiary, and in addition almost 500 juveniles were sent to reformatories. In the fifteen-year period preceding 1925 the population of the state increased ten per cent while the criminal population in institutions increased more than twenty-five per cent. In that same year—1926—1585 individuals were committed to the institutions for the mentally disordered in Virginia. The cost of operation of the institutions for the mentally diseased in the year 1926 amounted to $1,109,060.00—almost double the cost of the operation in 1910. I should say that there are in jails, in the penitentiary, in the reformatories, and in the various institutions for the mentally disordered in Virginia today no less than twelve thousand human beings. The insane population in the state has increased within the last fifteen years thirty per cent. If you have doubt about the importance and the consequences of conduct disorders I beg you to think upon these figures. I make use of them because I have not at hand similar data for North Carolina. The two states are not unlike and what is true of one state in these respects must be likewise more or less true of the other. The cost of apprehending, convicting and maintaining violators of the law makes an appalling sum. An appropriation of almost $600,000.00 was made from the state treasury for the maintenance of convicts in the state penitentiary, some of whom are maintained at the State farm and many others in the highway camps. The figures in North Carolina as well as in Virginia would mount far into the millions.

In the nation there are probably 300,000 patients in state hospitals, and in other institutions for the mentally disordered. It may be true that a number equally as large are constantly in jails and other penal institutions. In the issue of the *Manufacturers Record* for February 24, 1927, Mark O. Prentiss, in a discussion of "The Economic Consequences of Crime," states that criminal behavior in the United States costs every year a loss in money values amounting to more than $16,000,000,000.00. That is an appallingly large sum—a sum larger than the United States expended in any one year while actively engaged in the greatest war history has known; a sum larger than all the monies lent by the United States to all the European countries during and since the war; a sum of money larger in value than all the worth of all the crops that grow out of the ground in this great country in any year. In this country there are more than 12,000 homicides every year; more than 500,000 citizens are constantly engaged in dealing with the problem of criminal behavior; more than two per cent of all our population is thought to be constantly criminalistic. Mr. Prentiss is the organizer of the National Crime Commission. He is enormously informed about dollars and cents. Is he informed about the origin of crime and the proper way in which to deal with it? This brief paragraph comprehends his therapy: "If business men will exert themselves to demand a swift trial followed by sure punishment of the guilty, crime will decrease by half almost immediately."

In a contribution to the same publication in its issue for April 14, 1927, Mr. Prentiss attributes the increase in criminality in this country to the multiplication of laws and to the increase in the number of shrewd, conscienceless criminal lawyers, who defeat justice and prevent criminals from being properly punished—many laws, many criminal lawyers, many criminals walking abroad unpunished—so says Mr. Prentiss. I shall let the members of the great profession of law attend to him.

And now may we ask what is being done in the way of reaching an understanding of what all this so-called criminal conduct means? Why do human beings commit criminal acts? For a good many years I have spent much of my time in medical work amongst prisoners in the State penitentiary. At least twenty-five per cent of them are known to be definitely feeble-minded to such a degree as to affect their conduct. A certain number of them are epileptics; twenty per cent of them are syphilitic; more than ten per cent of them are psychopathic—that is, their mental makeup is such that they are highly unsociable and therefore maladjusted to whatever environment they may be in. A smaller number of them are actually insane, and in consequence of that fact many of them are being regularly transferred to the institutions for the criminal insane. Is it unreasonable to suppose that painstaking investigation would find a still larger number more or less irresponsible?

Is punishment the proper way in which to bring about restoration to mental normality? The investigation of the mental condition of those prisoners should have been carried on before the crimes were committed, or, if that were impossible, before the trials were held. Is any such activity going on in North Carolina? It is high time it were undertaken. In the State of Massachusetts all those charged with a capital offense, and all those who have been previously convicted of a felony, are mentally

examined by medical men specially trained in such work. The written report of such examination is filed with the clerk of the court, and is accessible to the court, the prosecution, the defense, and it is also usable as evidence. Such an examination practically makes impossible the trial of an irresponsible person, and it tends to make unlikely the use of the so-called insanity dodge. Underlying the law must be the fear that capital offenders and those who continue to commit crimes may not be mentally sound.

I hope I may never have blind adoration for law. For sensible laws I have profound respect; for senseless laws I shall try to maintain disrespect. Certain human beings have certain capabilities; others are without them. The individual who is color blind is not punished for his inherent defect. No amount of punishment could give him perfect vision. Many individuals cannot live in conformity to the law. It is beyond their mental capacity. It behooves society to find them out and to find out why they are so constituted.

History is filled with recorded evidences of the tragic failures properly and justly to interpret the law and to apply it. Many of the world's great ones have suffered on account of the ignorance of their fellowmen. Moses died a fugitive from Egyptian law: Socrates was sent to his death: the Carpenter of Nazareth was crucified for crimes that he never committed: many of his apostles paid with their lives for their opinions: John Bunyan sent his spiritual messages to us from a jail: yet each of these was tried, I presume, and convicted in a learned, dignified, and solemn court. But judges, jurors, and court officers have become lost in the dust of oblivion. The prosecuted and convicted and executed live on. It is wrong to expect too much of a mere mortal. God alone is competent to occupy the judgment seat.

The other day at the University founded by Thomas Jefferson, and many thought him a godless man, I saw cut in Greek letters deep in the stones of one of the buildings these words: "And ye shall know the truth and the truth shall make you free." We can do no better than adopt the divine saying as our guide.

DISCUSSION

Dr. McBrayer: I consider these two of the best papers I have ever listened to and I move that the papers be given to the public press of North Carolina.

Dr. Albert Anderson, Raleigh: In seconding this motion, I want to say that these papers have too much in them to allow of discussion in any detailed way. They fit into each other beautifully, depicting experiences that most of us are having daily and I now feel more than ever the great importance of starting something that will throw light on these great problems of the misfits and the criminals. I have felt for sometime that we ought to have a better understanding with the legal profession and within the last eighteen months we have had at the State Hospital in Raleigh two meetings led by Judge Varser and Chief Justice Stacy, considering how best to handle crime problems. I am satisfied that we do not understand each other (the doctors and the lawyers) and I had hoped that Mr. Hendren would discuss this subject today because I

know he is a very able attorney and has given considerable thought and study to the crime problem.

The discussion brought out at the two meetings above referred to did not reach any definite conclusion. However, changes must be worked out slowly in bringing two great professions to see alike the two phases, medical and legal, of the crime problem. We consider it from a medical standpoint which is flexible in considering the individual case. The legal profession treats the crime problem from inflexible laws that do not appropriately consider the crime problem as related to mental sickness. In order to clear up the differences between the two professions, we ought to start the Mental Hygiene Movement in this State in good earnest. Many of you gentlemen have been working for more than a decade in a most commendable way to add many years to the average life through well established methods of the State Board of Health, but in the prevention of mental diseases there has been very little done in the consideration of misfits described in Dr. Beall's paper.

In talking to the Secretary of our State Board of Health, Dr. Laughinghouse, some time ago, I was encouraged by what he said that his well organized board was ready to get behind the Mental Hygiene Movement to prevent mental diseases as it has been preventing physical diseases. He suggested that it would be well for us to use an issue in the *Bulletin* to discuss our Mental Hygiene problems and this would put before our people something to think about.

I wish to congratulate the Society on having the pleasure of listening to Drs. Beall and Hall in the presentation of two very able papers.

Motion that Dr. Hall's and Dr. Beall's papers be given to the press was carried by unanimous vote.

Adjournment at 2:45 P.M.

SECTION ON GYNECOLOGY AND OBSTETRICS

CHAIRMAN: DR. C. S. GRAYSON, High Point.

HYPEREMESIS GRAVIDARUM

By J. S. BREWER, B.S.M.D., Roseboro, N. C.

No more important subject concerns the obstetrician in his guidance of the patient than the vomiting of pregnancy and in this day of insistence upon proper prenatal care and supervision it occupies a position of peculiar prominence in the relationship between the doctor and patient. It is frequently the thing that first brings the patient to consult her physician and upon the way it is handled may depend the degree of faith which he is able to instill into her and particularly may depend that attitude of assurance and peace of mind which is so desirable in the gravid woman. Not infrequently the life of the foetus hangs in the balance and the gratification of the parental instincts may be dissipated if the issue is not met squarely and treated accordingly. This is my apology for presuming to claim your attention in the discussion of the old and time-worn subject of hyperemesis gravidarum.

By a brief review of the literature I hope to establish that present methods of treatment are but logical adaptations of fact that have been observed from time to time by various workers. Williams of Johns Hopkins in 1906 in his monograph recognized three types, the reflex, neurotic and toxemic. He also recognized in the fatal cases the analogy of the liver lesions to those observed in acute yellow atrophy. Ewing also in 1906 concluded that the vomiting of pregnancy was a definite clinical entity and also commented upon the liver lesions. Williams again in 1906 signifies his belief that the liver lesions are not the primary factor, but result from the circulation in the blood of some substance which has caused the metabolic disturbance. Ewing in 1910 takes the position that the disturbance is always of toxic origin and that the anatomical basis is found in the degenerative changes in the liver and kidneys and says that early vomiting is but the early sign of a train of metabolic disturbances which allowed to progress end in fatal vomiting, malignant jaundice and acute yellow atrophy. The complexity of the subject is recognized but the weight of the evidence seems to point to a functional disturbance of metabolic origin in the liver as the essential factor.

Duncan and Harding in 1918 concluded that a toxemia is the basis for all the vomiting of pregnancy. They report five cases of incarcerated pregnant uteri with vomiting only in three cases, correction of which did not stop the vomiting. They feel that the neurotic type is a reflection of the disturbance of the nervous system by the toxin. They recognize the presence of a metabolic factor and think the one most susceptible of disturbance is the carbohydrate.

Titus, Hoffman and Givens consider carbohydrate metabolism as the disturbing factor and point to the large requirement of carbohydrate in the growing foetus. Slemons found that fetal tissues synthetize their

protein from material in the fetal blood and that fats and liquids do not cross the placenta, but are manufactured in the body of the foetus from carbohydrate. He found a slightly higher mean blood sugar on the maternal side than the fetal side, thus indicating the mechanism of diffusion.

Lochhead and Cramer explain that the placenta stores glycogen until the fetal liver can function. Numerous investigators have shown that glycogen is abundant in the fetal tissues, and McAllister, by analysis, has proved that glycogen is present in the tubes and uterus at parturition and is especially abundant in the placenta. The demand of the foetus for glycogen is abrupt and is a drain on the patient who is called on at no other time than during pregnancy to supply glycogen to a tissue or organ. The uterus and foetus grow rapidly and the demand for glycogen is continuous and pronounced, and as the liver gives up glycogen, fat replaces it and eventually the glycogen storing cells degenerate.

Dieckman and Krebs in a paper in 1924 recognized three factors. The first and most important is the foetus and its need for glycogen. A second is an unstable maternal metabolism and the third is a deficiency of carbohydrate. They feel that all three factors must play a part before the vomiting becomes serious. They point to the rapidity with which post-operative vomiting and the vomiting incident to the starvation treatment of diabetes clears up under the administration of food and answer the advocates of therapeutic abortion by classifying the patient after abortion as one of post-operative vomiting, responding upon the administration of food, i.e., the foetus which has kept the liver depleted of glycogen is removed and the liver rapidly regains its normal supply. In a large service in the Washington University Medical School they had aborted no patient in three years and had had no mortality. They dislike the term toxemia and assert that the acidosis and toxic substances in the blood only form after the vomiting has become severe and the liver and other organs have been damaged and that they disappear when the metabolism becomes normal.

Titus, Hoffman, Givens, Dieckman, Krebs and others have advocated high carbohydrate feeding and intravenous glucose for the past few years. Thalheimer in 1924 reported the use of insulin in conjunction with the glucose in the treatment of three cases. He has since more strongly advocated it while Dieckman and Krebs have warned against its indiscriminate use and Titus has considered it unnecessary. In 1922 Harding and Watson made a report on the use of carbohydrate in the treatment of the vomiting of pregnancy. In a series of 135 cases treated by their methods by a group of men they report ninety-eight cures, twenty-five improvements and nine failures. They conclude that patient should be aborted if after five or six days of treatment the urine output remains low and the specific gravity high.

The review of the literature which I have given you is brief but I believe sufficient to show you that the trend of medical thought is to place this subject in the field of the metabolic disorders, with perhaps an underlying toxemia of some sort, as yet unknown, as the primary disturbing factor. In other words it seems to be a kind of autointoxication with a sort of deficiency carbohydrate metabolism as the principal factor. There

is a pronounced tendency to reject the neurotic and reflex elements in the etiology of the condition. Williams in the 1923 edition of his text book says, "I have had to abandon the conception of reflex vomiting, as increased experience has taught me that it should be regarded as a subdivision of the neurotic type." He seems to feel, however, that the neurotic type is but an exaggeration of a minor disturbance in a neurotic individual in which the toxic or metabolic factor merely acts as a predisposing cause.

Out of this newer knowledge it seems but logical that a system of supplying the known carbohydrate deficiency should have been devised. The rational plan is to start early and overcome the disturbance by supplying carbohydrate foods. This done, it is but a step to glucose injections in the cases that are severe and in which the food cannot be got into the stomach or kept down. The plan of treatment which I use in my own practice and which I shall advocate to you today is a modification of the plan in operation in the Washington University Medical School Obstetrical Service when I was on the service there and which was published by Dieckman and Krebs in 1924. It has been modified somewhat in the light of newer knowledge and adapted to the needs of private practice where one has to deal more with the ambulatory patient and where it is not always feasible to place the patient in a hospital. It is the simplest and most generally successful plan I have followed and carefully adhered to gives almost ideal results.

The plan of treatment depends upon the symptoms and classification of the patient. We consider three types, the mild, moderately severe and severe.

THE MILD is characterized by intermittent nausea and occasional vomiting. A certain amount of food is retained usually in the afternoon and evening. The urinary output is normal and there is no albumin or casts. The patient is able to retain fluid and is about her household duties. There is no disturbance of temperature, pulse or respiration and no acidosis. In private practice these patients are all ambulatory and frequently must continue their household duties. They are treated as follows: 1. The patient is requested to abandon her household duties or as much of them as circumstances permit. 2. To lie in bed for two hours in the afternoon. 3. To see that the bowels move daily by mild laxative or enema. 4. To drink freely of water, lemonade, grape juice or orange juice. The fruit juices are usually retained without difficulty. 5. To abstain from protein foods for several days and to eat five to six times a day. Do not drink fluids with meals as the diet is preferably a dry one. Eat freely of carbohydrate foods, such as crackers, toasts, potatoes, custards, cereal, sweets and bananas. 6. Luminal Sodium is given in one and one-half grain doses. A tablet is to be taken the first thing on arising in the morning and repeated through the day as necessary. An effort is made to anticipate the nausea and take the tablet an half hour or so before its onset. Luminal Sodium is given in all cases. It is supposed to have a specific effect on the vomiting center. After a day or so many patients will be able to estimate the duration of the effects of the drug and by repeating the dose before all effect is worn off anticipate the nausea and be free from vomiting all day. As the patient eats and retains more food the diet is increased, the protein gradually,

but the fat is kept at a minimum on account of danger of ketosis. If the patient comes early and follows this regimen closely most cases will respond favorably. An occasional one may go on into the moderately severe.

THE MODERATELY SEVERE is characterized by persistent nausea and frequent vomiting, which may subside toward evening. Only small amounts of food are retained. The urine output is diminished and the specific gravity above normal, due largely to the low fluid intake, as fluids are now retained with difficulty. Diacetic acid and acetone are present in the urine. The plasma combining power and alkali reserve of the blood may be slightly decreased and the pulse may be moderately accelerated. 1. These patients should be put to bed under the care of an intelligent helper or nurse. 2. Bowels to be kept open by enema. 3. Nothing by mouth for twelve to eighteen hours. 4. Saline by Murphy drip or rectal tap of 300 to 400 c.c. of 5 per cent glucose solution every four to six hours. If nothing is retained by rectum the fluid equilibrium of the tissues may be maintained by saline subcutaneously. 5. Following the initial fast the patient is fed one to two ounces of a thick paste made of Karo syrup and Dryco or Klim milk every one or two hours and a banana is allowed occasionally. This will frequently be retained and if so the caloric requirements are met. After two to four days other food can be retained. If this mixture is vomited an Andrews nasal tube is inserted and a preparation of ten to thirty per cent Karo syrup and Dryco or Klim milk is introduced through it in amounts of 100 to 300 c.c. every two hours. The nasal tube may be kept continuously in place, but it is usually desirable to remove it during the night and reinsert the next morning. It has been kept in place for as long as eight days. The preparation is almost always kept when introduced through the nasal tube, but if not the duodenal tube may be inserted and the food introduced into the duodenum. 6. Luminal Sodium is given by mouth if retained, otherwise by hypodermic injection. After the acidosis clears up and it seems advisable the patient is gradually placed on the dry diet as before mentioned.

THE SEVERE type is a seriously sick patient. The nausea and vomiting are constant and nothing is retained by mouth. The body fluids are ejected and there is marked dehydration. The skin is dry and inelastic. The urine is scanty, of high color and concentrated and contains albumin and casts. There is marked acidosis and the patient is worried, restless and apathetic. The temperature may be slightly elevated and the pulse is rapid and of poor quality. This patient should be in the hospital under the constant attendance of a trained nurse and is treated as follows: 1. Nothing by mouth. 2. Luminal Sodium by hypodermic. 3. Rectal tap of glucose or saline every four hours. If not retained, then saline by hypodermoclysis. 4. Glucose solution in twenty to ten per cent dilution every six to eight hours. This will supply the caloric requirements in the form of carbohydrate and also aid in supplying the fluid needs. Thalheimer advocates the giving of insulin with the glucose. Titus claims it is unnecessary. My own opinion is that it depends upon the dilution of the glucose and rapidity of injection. Wilder and Sansum have demonstrated that 0.8 grams of glucose per kilo

of body weight may be given per hour without causing glycosuria. Thus if dilution is low and the rate of injection is slow insulin is not needed. But if a twenty per cent solution is used and the rate of injection is rapid thirty to forty minutes for 500 c.c. then glycosuria will result and insulin may be given to take care of the spill over what the body itself is able to utilize. These patients ought to have 3000 to 4000 c.c. of fluid daily and the dilution of the intravenous glucose should depend upon how much fluid is introduced by rectum and subcutaneously. As the caloric and fluid needs of the body are met by this treatment the patient may be carried along for several days without danger. When thought advisable the nasal tube may be inserted or food given by mouth and in this way the patient is gradually worked back to a less drastic routine and finally to normal.

Under this plan of treatment therapeutic abortion is rarely necessary. There are patients who vomit in an effort to induce the physician to produce an abortion. They will not follow the treatment outlined for the mild case but will sooner or later vomit themselves into the more severe class when they can be put to bed and treated accordingly after which they will probably be willing enough to continue the pregnancy. Those cases which present anatomical displacements and disease such as incarcerated uteri, cervical erosions and other pelvis pathology should be attended to according to the accepted methods.

SUMMARY

1. The vomiting of pregnancy is a definite clinical entity.

2. The present trend of research and clinical investigation is to regard the affection as due to a metabolic disturbance with a carbohydrate deficiency as the principal factor.

3. There may be some toxin as yet unknown circulating in the blood which primarily throws the carbohydrate metabolism out of balance. It is not probable, but is worthy of investigation.

3. The pathological changes observed in the liver and other organs are secondary changes brought about by the disturbed metabolic processes.

4. The formerly regarded types of neurotic and reflex vomiting are probably an exaggeration of a minor disturbance in a neurotic individual. The patient being neurotic the manifestations are out of proportion to the degree of disorder.

5. The plan of forced carbohydrate feeding is but the logical outcome from facts brought to light by a host of investigators over this country. It meets the two principal problems in any case, to supply food and fluid.

6. Under the strict regimen outlined above the control of the patient is more satisfactory, the response more prompt and the necessity for abortion is reduced to an almost neglible minimum.

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DISCUSSION

Dr. R. A. Ross, Durham: Mr. Chairman: Whatever the cause of vomiting of pregnancy, we all know the varying gradations of the picture, and should have some definite idea of treating the degrees of this complication.

Many different avenues of approach lead to the same idea of associated or primary carbohydrate dys-metabolism. Haupt, of Germany, carried on some most interesting experiments and observations in regard to the structural changes—miscroscopic—taking place in the pituitary body during pregnancy. He was interested in it chiefly from a medico-legal standpoint in determining the progress and length of pregnancy. Dr. Jack Hirst first used corpus luteum in aiding early nausea. His idea, as we know, being based on the fact that corpora lutea do not form nor have a function during pregnancy, as the menstruation stops. The subsequent lack of this secretion reflecting itself in an endocrine unbalance. We have all noticed the improvement in pregnant diabetics after the fourth month or so, presumably from the aid of the fetal pancreas. MacNider in several scholarly papers has shown the relation of the liver and kidneys to the toxemias of pregnancy. Nalle had a very comprehensive paper before this section on this subject, showing how all the ductless glands are inter-related and have direct bearing on carbohydrate metabolism and its effect on vomiting.

In regard to treatment, I have followed practically the same general plan as Dr. Brewer. Intravenous corpus luteam is always tried, never over twelve injections unless marked improvement is noted. Cervical erosions and irritations are noted and treated. The same holds true for misplacements. Thalheimer and Titus have been pioneers in glucose therapy. Their only difference has been the advisability of including insulin in the injection. To my mind the question is whether or not you want the glucose metabolized or stored. If insulin is given the glucose is made use of immediately; however, if the liver is depleted of its sugar content and there is a necessity of its being stored for future use, the insulin is withheld. Here again the middle ground is probably the safer. It is my practice to use a unit of insulin for every five grams of glucose instead of every two and one-half grams, as is usually done.

As to abortions. A small percentage must be done. In the severe type where it is inevitable, it should not be delayed too long. There is no doubt in my mind that the fatal cases all have yellow atrophy of the

liver. If Dr. Brewer's regime be closely followed this type of patient will be seen in decreasing numbers.

I enjoyed his paper very much and am anxious to get a copy of it.

Dr. J. S. Brewer, Roseboro (closing): I am going to say a few more words and they are to report a case that came under my observation. Dr. Ross' remarks about the relation of the fetal pancreas to the mother brought it to my mind.

I remember a woman who had suffered from diabetes for some four or five years. She came into the hospital pregnant about seven months. She had been taking insulin for two years, about 40 units a day, and after becoming pregnant, had on her own account, reduced it to ten units. She was kept for observation in the hospital until the termination. At eight months insulin became unnecessary; she could assimilate an ordinary diet. She delivered, the foetus died and she died in coma on the third day. An autopsy was performed. The pancreas of the foetus was five times normal size. The islands of Langerhaus were ten times normal size. The fetal pancreas had supplied the mother with insulin. It proves that there is an exchange between the mother and the foetus of insulin, and indicates a relationship in carbohydrate metabolism between the two.

Dr. R. T. Ferguson, Charlotte: Before reading my paper I wish to make a few remarks concerning a resolution which I presented before the General Session of yesterday asking that in future the Transactions of the Medical Society be divided into two sections for the reading and discussion of papers, one to be known as the MEDICAL SECTION and the other as the SURGICAL SECTION. When we began our section this morning we had only a handful present and the same condition prevailed in all the other sections. When a man goes to the trouble to prepare a paper for presentation to this body he would at least like to have a fair sized audience for the presentation.

There are really only two classifications in the Society and everything comes under either MEDICINE or SURGERY. Gynecology is surgical and Obstetrics is by far one of the most important surgical branches we have to deal with, and there is not a man doing general practice who does not want to hear all he can about obstetrics. Under the present plan with a multiplicity of sections and only a handful in each section the Society is losing the main purpose for which it is assembled. Under this plan the members will be kept together and there will always be a good audience in both sections. A number of the physicians present have expressed approval of the idea to me. I am sorry that I cannot be present at the meeting of the House of Delegates this evening to push this resolution.

In discussing the subject of Vesico-Vaginal Fistulae I shall not have anything to say about Dr. Marion Sims for you all probably know as much about him as I do and can get all of this out of text-books; what I desire to do is to present an interesting case giving you my personal experience and inviting your discussion for I believe that we often get more from the discussion than from the actual listening at papers.

VESICO-VAGINAL FISTULAE

Robert Thrift Ferguson, M.D., Charlotte, N. C.

In discussing vesico-vaginal fistulae it is not my intention to give you a didactic lecture on this subject for the condition has been almost relegated to the dark ages by better obstetricians and better obstetrics. It is only occasionally that we are confronted with this complicated surgical problem. In the days gone by it was not uncommon to see the condition frequently but I am happy to say that it does not come under my observation very often.

I think it is more interesting, and vastly more beneficial to the average medical audience to discuss an interesting case outlining the treatment and the results rather than write a long uninteresting dissertation that can be read out of the average text-book on the subject.

The essential points in the history of the case I wish to report today are as follows:

Mrs. J. M. N., age forty, has given birth to nine children. The first was an instrumental delivery while all the others with the exception of the ninth were normal deliveries. With this last child she was in labor for twenty-four hours and was finally delivered with instruments. She reports having had a severe hemorrhage and that her bed continued wet following delivery up to the time she entered the hospital, three weeks later. At this time the patient was very anaemic with a red cell count of 3,184,000; leucocytes 12,300; temperature 99 3/5; pulse 100; respiration twenty. The urine showed a decided trace of albumin, acid in reaction, 100 pus cells to the field and a few red blood cells. Blood pressure was 110 over sixty. Patient claimed that she had had no headache, backache or leukorrhea until after birth of this child, since which time she has had all three continuously.

Vaginal examination showed uterus slightly enlarged, in second degree retroversion and firmly fixed in the pelvis.

The adnexa were apparently normal. The cervix was lacerated from tip to the internal os. The vaginal mucosa was lacerated from the tear in the cervix, and continuous with it, in a semilunar fashion, in the left vaginal vault to within half inch of the urethra. About mid-way of the tear in the vaginal mucosa was an opening into the bladder which readily admitted two fingers and from which flowed all the urine. Patient has had no control of the urine since delivery. The bladder mucosa was well rolled out. There was also an extensive laceration of the perineum.

After one week's rest in bed taking nourishing food, daily irrigations of the vagina with boric acid and taking ten grains of urotropin every three hours for the last three days the patient seemed to be in about as good shape for operation as she was likely to get under the circumstances, therefore four weeks after the delivery the operation was performed.

Before proceeding with the operation I called in Dr. Raymond Thompson with the hope that he would be able to place a catheter in each ureter and drain the kidneys in this way for a few days and keep the bladder dry with the hope that I would stand a better chance of getting primary union, but on account of the fact that the bladder mucosa was nearly all rolled out it was impossible to locate the ureters and it was necessary to depend on a retention catheter as usual.

The tear in the cervix had been so extensive that the two sides were separated until the appearance was that of a flattened surface. The uterus was so firmly fixed in the pelvis that it was impossible to draw it down more than a fraction of an inch, therefore I was confronted with the proposition of having to work almost blindly in making my dissections and placing the sutures. First I dissected the scar tissue from the cervix and sutured this as best I could so that I could get a better hold and be able to work from the end of this tear as a base.

Dissection of the bladder mucosa from the surrounding scar tissue was an almost insurmountable accomplishment but was finally done in a very unsatisfactory manner. The bladder mucosa was also very difficult to suture on account of its inaccessibility but I was finally able to approximate the tissues after which there only remained the task of dissecting the scar tissue from the vaginal tear and suturing this. When the job was completed I had many misgivings as to the outcome but am happy to be able to show you on the screen what luck followed my efforts. The patient has not leaked a drop since the operation and is one of the most grateful persons I know.

There are a few points in connection with operations for the cure of vesico-vaginal fistulae to which I wish to direct your attention. In the first place it is very important to acquaint your patient with the unquestioned fact that these are difficult cases at best and that there is likely to be a failure the first time and the possibility of a second or even a third operation before the fistula can be permanently closed. I recently saw a case in consultation that had been operated three times with no result and by an excellent surgeon. This is an excellent opportunity to state that it is never wise to criticize the other fellow's failures!

The size of the fistula, the location, its accessibility and whether or not the vesical sphincter has been destroyed will all influence your prognosis. The amount of scar tissue and the character of infection you have to deal with will also greatly influence your final result. The time you will select for the operation in recent cases will be one of the biggest questions you will be called on to decide. In the past most authors have recommended waiting from two to four months or longer before attempting a closure but I am of the opinion that if the inflammation has sufficiently subsided one month is long enough to wait. After the scar tissue has contracted too far you will find it much harder to dissect your flaps and the bladder mucosa will have pouched out much farther, thus making the situation much more difficult to handle.

The nature of the irrigations you will be called on to use for your preoperative preparation will depend largely on the character of the infection you have and the amount of inflammatory tissue you have to deal with. Boric acid works admirably in the average case. Where you have to deal with an alkaline urine it will be advisable to give benzoic acid over a short period. Your suture material will depend largely on what you are accustomed to using and the results you get under other conditions. I have practically quit using other than absorbable suture material under any conditions and have had no cause to regret this change. Where it is possible to place catheters in the ureters I believe this is the method of choice for if you can keep the bladder empty for from twenty-four to forty-eight hours you have practically overcome the greatest handicap which confronts you for the bladder mucosa is very

vascular and will heal readily if given half a chance. If this is impossible the retention catheter is the only avenue of escape. The length of time you will leave the catheter in will vary with the case and the conditions present. With small fistulae the time will be short but with larger ones it will be necessarily lengthened. After removal of the catheter I prefer to empty the bladder every two hours by allowing the patient to void, if possible, and if not by catheterization. This should be continued till the healing is secure. In paring the margins of the bladder wound I think this is easily overdone and a free separation of the mucosa from the surrounding tissues is all that is necessary. There are practically no dangers connected with the average operation for vesico-vaginal fistula. A few inoperable cases will be met with and in these it may be necessary to switch the ureters from the bladder to the rectum or conduct the urine from the bladder to the rectum and close the vagina. No case is considered hopeless as long as the vesical sphincter remains intact.

DISCUSSION

Dr. Brodie C. Nalle, Charlotte: I am very glad to have the opportunity to discuss Dr. Ferguson's paper since I was present and saw him operate on this case. His paper is timely since it has been a rather neglected subject. I can hardly recall when I heard a report on a case of vesico-vaginal fistula. Of course, the improvement in obstetrics accounts for the less frequent occurrence of this distressing condition, but the improvement is not so great that we are not occasionally confronted with such cases.

Dr. Ferguson's case was a very bad one, and I am sure the largest hole in the bladder that I have ever seen following delivery. I want to congratulate him upon his results in this case because I have since seen the case and feel that he got a perfect result. I do not know of a more distressing condition and nothing for which the patient should be more grateful than to be relieved of such a fistula.

The full bladder during delivery not only adds to the distress of labor but I am sure makes the occurrence of vaginal fistula more probable.

At to the time at which the operation should be attempted, I feel sure that the sooner it is done the better chances we have for a good result. I see no reason why an immediate attempt should not be made unless the condition of the patient prohibits. A retention catheter for the first few days adds, I am sure, greatly to the chances of a good result.

Dr. Raymond Thompson, Charlotte: Mr. Chairman, Gentlemen: Dr. Ferguson called me in to see this case for the purpose of inserting the catheter for kidney drainage. We often drain one or both kidneys with the ureteral catheter for as long as a week without any danger or trouble at all. I think it is a good idea in this kind of operation, to insert the ureteral catheter, as it will help avoid the danger of cutting the ureter. We were all gratified at the perfect results that he got. Four weeks after delivery the operation was performed upon this case. Waiting two or three months would be much worse from the standpoint of permanent results. I have not seen many cases of vesico-vaginal fistulae. This is the second case with a tear that large. You could see an opening

as large as a fifty cent piece. I congratulate Dr. Ferguson on his good results.

BLOOD TRANSFUSIONS: THE INDICATIONS AND TECHNIQUE

By Dr. R. D. Davis, Greensboro.

The transfusion of blood was done as far back as 1665 by Lower and Willis of London and Denis and Bryant of France. These men transfused the blood of one sheep into another sheep by means of a goose quill extending from the vessels of one sheep to the vessels of another. The next year King and Cox, before the meeting of the Greshan College in London, transfused the blood of a little mastiff dog into the veins of a spaniel dog, with such success that the medical men became interested at once in transfusion. The next year Lower and King, before the Royal Society of the Arundel House in London, transfused the blood of a sheep into the veins of a man with success. The recipient in this case received twenty shillings for his part in this experiment. It was reported that he related all kinds of marvelous benefits from this sheep blood. Following these experiments many were done on both animals and humans, but with such terrible reactions and such fatal results in many cases that the practice soon fell into disrepute with the medical authorities.

In 1898 Crile of Cleveland revived the work of transfusion and the profession again became interested in it. In 1900 Landsteiner and Shattock proved the presence of agglutinins in the serum of one individual for the cells of another. This was really the beginning of the scientific work on blood grouping. A few years after this D'Agate of Buenos Aires, recommended the addition of sodium citrate to the blood to prevent coagulation during the process of transfusion. This was really the first work that simplified the technique so that blood transfusion really became practical for all doctors who wish to avail themselves of the new method of treatment. Jansky and Moss have each given us a very satisfactory method to follow in typing blood. I think it is a good plan to type every surgical and obstetrical case as soon as it comes under the care of the physician. It is not much trouble nor expense and will sooner or later save a life.

INDICATIONS

The indication for blood transfusion can be divided into two groups—Emergency and Elective.

The emergency indication is brought about by acute massive hemorrhage or by a terriffic shock. The emergency indications are therefore limited but the transfusion in this type of cases often saves lives in tiding over a patient who will in a few hours be able to take care of himself. This is a very interesting group of cases and both the surgeon and the family are much gratified with the results. The indications for transfusion in this type of cases are weak, thready pulse, blood pressure below 90, pinched expression, air hunger, thirst and semiconsciousness, ringing in the ears, swimming in the head, blood count below 2,000,000 and haemoglobin below 40.

In the elective group the indications for transfusion are not so urgent. This type usually follows a slow hemorrhage, a long or very virulent infection, or some chronic disease, such as the leukemias and malignant growths. The indications for transfusion here are a low red count, low per cent of Hbg., loss of weight, fatigue, loss of appetite, a lowered phagocytis power of the white cells and lack of leukocytosis. This is especially true in infections.

TECHNIQUE

There is no surgical operation now employed that requires more careful technique than does the transfusion of blood. This is one operation in which every single detail must be correct.

The proper tying and cross agglutination of the blood of both the donor and the patient is very essential. All donors should have a negative Wassermann and should not be an asthmatic. Cases of both syphilis and asthma have been noted following the use of such donors. There are four main types of blood, numbers one, two, three and four. If one uses the Moss classification he will have number one as the universal recipient and number four as the universal donor. If the Jansky classification is used then number one is the universal donor and number four is the universal recipient. The reaction of number two and three is the same in each classification. It is of prime importance for the operator to know which classification was used on a certain donor or patient before he attempts to use the blood. Cross agglutination should be done, however, and this will check any mistake. There are as many as fourteen different subgroups and these will often give a reaction if they are not carefully cross agglutinated. Even then we will get some reaction at times. If the cells of the patient are agglutinated by the serum of the donor that donor will not be suitable. If the cells of the donor are agglutinated by the serum of the patient, then it is best not to use that donor. However, in an emergency one is justified in using him if the types are all right. At the Wesley Long Hospital we keep a list of professional donors according to their types and therefore, we only call the proper type donor when we want to transfuse. Then we always cross agglutinate before every transfusion. In typing blood as well as in cross agglutination, it is not best to get it immediately after a meal. The serum does not separate from the cells nearly so well. If the patient is highly nervous, or if former transfusions have given reactions, it is well to give small doses of morphine sulfate and atropine; also to surround the patient with hot water bottles. I usually prefer to transfuse the patient in his own room. This helps to prevent the patient from becoming excited by the operating room.

There are two methods of transfusion commonly used. The citrate indirect method and the whole blood direct method. The first is most commonly used because it lends itself more readily to all conditions and circumstances. However, the second has its advantages, which to my mind are well worth considering. To give a transfusion of blood by the citrate method you should have the donor lie supine with a board six inches wide and four feet long extending at right angles from under the

table, upon which lies the donor's bare arm. This board and the arm are as carefully draped as if you were going to do a major operation. One sterile and one unsterile assistant is necessary. The unsterile assistant places an ordinary rubber tubing around the arm 3 inches above the elbow. This is tightened until the pulse is just palpable at the wrist. If the tourniquet is too tight the arterial blood is prevented from coming past and no new blood will get into the arm. Therefore, if you get into the vein very little, if any, blood will come out. If the tourniquet is too loose no blood will be dammed back in the veins and it is exceedingly hard to get the needle to go through the three coats of the vessel, and especially the inner coat. The point simply pushes the tissue ahead of it. The failure to get blood is more often due to the improper application of the tourniquet than due to any fault of the operator.

Both the operator and the sterile assistant should sit comfortable on stools and preferably on the head side of the arm. The most prominent vein is chosen and with a very small needle one drop of one per cent novocain is put in the skin immediately over the chosen area. Care should be taken not to put in more than one drop because the infiltration will interfere with the palpation of the vein. The prominence of certain veins vary in different individuals, therefore no one vein can be used routinely. As a rule, however, the median basilic is very satisfactory and since it always runs parallel with the course of the thumb one can very easily tell in even the very fattest arms what direction to plunge the needle in. It has often happened that the needle is plunged into the vein and then thru the opposite side because the operator does not know the course of the vein. A knowledge of the course of the vein, therefore, is very necessary. A large needle number sixteen is preferably the best size. This should have a glass connection about two inches long attached but no rubber tubing beyond this. This two inch glass tubing allows one to see the blood immediately when he strikes the vein and also carries the blood stream far enough over the side of the arm and board. The blood then will fall into a 500 c.c. graduated glass vessel which has in it twenty-five c.c. of five per cent sodium citrate. The vessel is held by the sterile assistant who has a glass rod and stirs continuously, mixing thoroughly the citrate and the blood. It is well to rinse the sides of this vessel with the citrate solution before the vein is punctured. The only virtue of the citrate is to prevent the coagulation of the blood. Blood with five c.c. of citrate to the 100 c.c. will keep in the refrigerator for three or four days. In fact, it will not coagulate at all, due to the fact that citrate prevents the pro-thrombin from becoming thrombin, which is the constituent of the blood that brings about clotting. By the citrate method of transfusion, therefore, the blood can be given to the patient any time within three or four days. Often one desires to give small quantities of blood—say 150 c.c. at twelve to twenty-four hour intervals. In such a case one donor can give blood at one sitting for several transfusions. For such cases the citrate method economizes in both time to the surgeon and money to the patient.

Some operators prefer to draw the blood with a 100 c.c. syringe or some of the various blood transfusion apparatus. This is all right and prevents a clotting of the blood in the needle, which sometimes happens.

If, however, you draw the blood too quickly if often makes the donor rather faint. As soon as the blood is obtained the donor should drink one to two glasses of water and if he feels all right he can be dismissed. It is not wise to take more than 500 c.c. of blood even from the healthiest of donors. Three to five hundred c.c. of blood is the usual amount to give at one sitting. In giving the citrate blood a small rubber tubing which has been soaked for at least three weeks in a ten per cent sodium hydroxide should be used. Strange to say, there is something in new rubber tubing that gives the patient a reaction even with normal saline solution. What the sodium hydroxide does I do not know, but the patient is not nearly so likely to have a reaction if it is used. This I do know. The same glass connection can be used that was used in drawing the blood. The same method of applying the tourniquet is used. The patient's arm is prepared in the same manner as was the donor's. A small amount of normal saline is placed in the glass container and this fills the tube and needle, driving out the air. The same care as was used in drawing the blood is now used in regard to inserting the needle in the direction of the vein. As soon as the blood comes through the needle and to the glass connection the operator knows he is in the vein. The tourniquet is then removed by the unsterile assistant and the saline allowed to flow in. Just before the last saline leaves the glass container which is of course held up two to four feet above the patient, the blood is poured in. This should be done so as not to make bubbles in the blood. If the blood is poured so as it will strike the sides of the vessel and not the surface of the liquid, bubbles will not form. The blood should be warmed by allowing the tube to pass through a basin of fairly warm water. It is well to use a smaller needle (say number eighteen) than was used to draw the blood. Blood flowing rapidly into a patient will frequently give him a severe reaction, while the same blood allowed to flow in more slowly will not. It is highly important to allow the first few c.c. to go in very slowly and then to stop for a few seconds. The severest and most fatal reactions will usually start within the first thirty to sixty seconds, and when you have given only ten to twenty c.c. of blood. This is due to either incompatibilitis of the blood or to a reaction to a foreign protein.

In transfusing with whole blood by the direct method, one must use some of the newer apparatus on the market for such a purpose. I find that the Little Factotum, invented by Dr. Sorese, is very satisfactory. This is operated on the ball valve and gravity principle and the syringe is a two c.c. one. This keeps the blood on an almost continual flow.

The same technique is used to prepare the arm and to get in the vein, as in the citrate method. The advantage of this is that the blood is given at exactly the right temperature and without the addition of the citrate which in some manner alters the blood. I also believe that the carbon dioxide and the Ph. constituent of the blood is changed when it is allowed to come in contact with open air and lose its body temperature. Certainly reactions are less with the direct transfusion. Also it can be done without any assistant at all if necessary and the time required for the operation is a great deal less than in the citrate method. In the direct method the needle and the tubing is filled with normal saline before the needle is introduced into the patient's vein. After the needle is prop-

erly placed in the patient's vein one or two syringes full of saline are put in. Next the needle is placed in the donor's vein and as soon as the blood starts through the needle the tube is connected and the operation from now on simply consists of counting the number of times that you pull the plunge back. Each pull sends two c.c. of blood into the patient's veins.

SUMMARY

Be surgically sterile—type and cross agglutinate—use healthy donors—and transfuse whenever there is any indication for same. If in doubt about its value try it and be convinced.

DISCUSSION

Dr. Frank Sharpe, Greensboro: Mr. Chairman: I think there is nothing perhaps that is more useful when it is needed than a transfusion. I have only two or three things that I just want to mention in connection with transfusion. I think when a patient has been given a transfusion and that patient needs another transfusion it is always well to bear in mind that the patient must be retyped, because after one transfusion the type changes and the same donor does not usually suit. I think the majority of mild reactions following transfusions are thermal reactions due to differences of temperature of the blood. I think an important thing is to see that the vessels used are kept at a given temperature and the blood kept at as near body temperature as possible. You should be ready when giving a transfusion with adrenalin and morphine in case of reactions.

Dr. Geo. W. Johnson, Wilmington: There is one thing I do not think Dr. Davis mentioned that is to my mind most important, and that is matching the blood just before transfusion. We had an unfortunate experience in Wilmington when this was not done and last month if the blood had not been rematched we would have had another. The blood and serum that matched one day, two days later showed a marked haemolysis.

Rematching is especially important in patients who have an infectious disease for in these patients the blood seems to vary from day to day.

Dr. J. S. Brewer, Roseboro: The value of blood transfusion after hemorrhage is well-known. It requires no special emphasis today. But a large and somewhat neglected field for blood transfusions is in the acute infections. In peritonitis, septicemia, or any of the acute infections, in which the patient goes along from day to day and week to week gradually growing weaker, the doctor feels that if the patient will hold on a little longer the infection will subside and the patient will recover. That patient seems to need an additional something which will enable him to hold on and blood is the thing that will do that. Blood transfusions every three or five days—sometimes four or five or six transfusions, if necessary, will enable that patient to carry on, to fight the battle a little longer and give his body an opportunity to develop antibodies and overcome the infection and he will recover. I think that in treating these cases of infection we ought not to wait too long before giving a transfusion. If you get a case of peritonitis, puerperal septicemia or other

severe local or general infection and the patient has a temperature around 102 to 104, looks weak, loss of appetite and feeble, rapid pulse, you know that soon there will be anemia. If you begin early and give blood repeatedly you can combat that anemia as it occurs. I believe we should give large amounts, say 400 to 600 c.c. I have given as much as 800 c.c. in these cases. If one gives small amounts one must repeat earlier. Think also of the available donors. If there are only one or two donors and the patient will be sick several weeks give small amounts. A week or ten days later the donor may be drained again. If large amounts are given one is required to wait a longer time before the donor may be drained a second time.

The question of typing was brought up. I think all patients should be typed and matched before a transfusion. There is then a double check on the matching and it is often my custom to make a third check just before the operation when the cells of the donor are matched microscopically against the serum of the patient. Take a test tube the size of a pencil and put in a c.c. of the patient's serum and a little sodium citrate solution and stick a needle in the donor's finger and let a drop of blood into the test tube and before a good light look for clumping. If none in three minutes, proceed.

I think a great many of the reactions are due to foreign protein on the flasks and tubing. You can overcome that by always washing them in distilled water before sterilization. If reaction occurs from incompatible blood it will come in the first minute or so of the operation. The most prominent sign of reaction I have noted is severe pain in the back. The patient will begin, soon after the blood begins to flow in, to complain bitterly of pain in the back and if it continues it is best to stop. Some one has demonstrated that the average individual can handle around 100 c.c. of incompatible blood, but it is not best to risk severe pain in the back that far. One other not infrequent cause of reaction is due to putting the blood in too cold. This of course applies to citrate transfusion. The blood should go in at a temperature about 41 degrees centigrade. There will then be no reaction on account of temperature. Many times blood is given too cold and in a few hours the patient will have a chill and high fever. That ought to be prevented because many patients are too weak to stand it and death may result.

AMELIORATION OF THE PAIN OF CHILDBIRTH

By Dr. John Watkins

A discussion of this subject should be prefaced by an apology or sufficient explanatory remarks should be made to justify it, for since Sir James Y. Simpson first used ether in a delivery January 19, 1847 (and was roundly criticized by his colleagues and denounced from the pulpit) analgesia or anesthesia in obstetrical practice has been a point of departure for many useless, varied, and often acrimonious, discussions. The literature on the subject does not contain much original data though the bibliography is large. (X) It appears not a large amount of research,

study or critical analyses of statistics have been made or reported, yet few branches of medicine offer such a uniform and constant source of clinical material or such a varied medical personnel from which to obtain experience. I have been unable to find a broad, general discussion so necessary for an unprejudiced consideration of the various methods proposed for the amelioration of pain in childbirth. It appears that in so far as is compatible with safety of mother and child and as is consistent with good obstetrical practice judicious use of analgesic methods of delivery are to be recommended, for there are good reasons for the conservative use of analgesics in labor. There is nervous and mental exhaustion and shock (1) incident to delivery, as well as physical injury and exhaustion. There is heightened blood pressure; increased rate of heat production; often an ordeal of fear and period of suffering. Some of the pathology of labor and puerperium can be avoided and much of the natural reserve or convalescent ability of the woman can be preserved. Well chosen and judicious use of an analgesic preserves vitality and nervous stamina. It augments relaxation, decreases tendency to laceration of tissue under stress and pressure and greatly facilitates examination that is usually necessary for obstetrical maneuvers.

Yet, today, more than eighty years after an anesthetic was first successfully employed, labor to most women is still a trying, often injurious, and usually an unnecessarily painful ordeal. She has borne this with traditional stoicism. She has carried the burden of her sex but to those who are observant she is complaining and it is predicted that she will refuse to carry the cross of suffering in the near future. She will discard it as she has those social customs of occupation, suffrage, dress and conduct that have to her mind restricted her freedom, deprived her of pleasure, or the right to go and do. She will demand and receive relief of the suffering in childbirth as such is compatible with safety and correct delivery. I believe it behooves us to turn our attention for a time away from the numerous technical phases of obstetrics and consider broadly, and without prejudice, and to discuss freely this subject of pain in childbirth; to employ more and choose with care for each case the methods now proposed and in use by capable obstetricians; to carefully observe and record our experience and to report these; and to constantly seek new and better methods. Much of our opinion on this subject is prejudiced and it appears some of our practice has been thus influenced. Analgesic methods are much at variance in our best maternity centers and the opinions of our most capable and experienced obstetricians are not in accord. Why this wide divergence? Varying as it does from complete withdrawal of all drugs on the one hand—to the employment of anesthesia to the surgical degree, manual dilation of the cervix and extraction by version, on the other extreme? The problem of the amelioration of pain in childbirth, it seems to me, does not involve insurmountable obstacles. In our present state of medical knowledge, our unexcelled institutions, and under the guidance of men of large experience, this matter should be more definitely settled. Let us then for a few minutes consider this subject of pain in childbirth; its causes, character, origin, severity and duration. Let us review briefly the anatomy

and physiology concerned; the pathology involved. Look up the history of analgesia and anesthesia in labor and the experience of others. Compare this with our personal experience and make a critical review of the methods of amelioration at present in use by capable men. And from this arrive at some definite and well founded and unprejudiced conclusion. I believe this is well worth time involved to those whose desire to improve their technique of delivery and benefit the mothers of this country.

WHAT IS PAIN?

No other phenomena connected with the history of the human race has been so great a factor in the development of medicine as has pain. The first thought and the first effort of primitive man must have been directed toward the relief of pain. Pain brings more patients to the physician than any other symptom, yet, while the most universal symptom and the most encountered, there has been so far no adequate or entirely satisfactory explanation of its nature or mode of action.

Is pain a special sense of an afferent nerve, or an exaggeration of a common sensation? If pain were a special sense, then there should be logically a pain center, as all other special senses have such a center. But no pain center has ever been located. (2)

If pain is an exaggeration of an ordinary sensation, then it must be closely dependent upon sensibility and must operate only in a rather restricted range. For example, heat and cold (ordinary sensations) become pain at either extreme of temperature—not a wide range—and not distinguished. Tactile sense becomes pressure, pressure becomes pain, each sensation operating within a rather restricted range. Pain cannot be definitely defined, but it may be regarded for our present purposes as an extreme discomfort due to a disturbance of the sensory nerve cells as a result of prolonged or increased normal stimuli. It should be added that these stimuli are often harmful or destructive.

Though there is no evidence of a separate anatomical structure for pain, there is evidence that pain has a functional independence. (3)

For example, pain can be abolished without destroying any other sensibility. Also the rate of conduction of pain as a sensation is only one-fourth as fast as tactile sensations (10 M to 40 M a second). Pain is not a distinct or definite sensation. There are many painful sensations. Various persons react differently to painful stimuli. The same person reacts differently to the same stimulus under varying circumstances, important among which is psychic influence. In rare cases pain is totally abolished. A consideration therefore of the complicated nature of pain explains in a measure why its amelioration has been a problem to the profession.

ORIGIN OF LABOR PAIN

In considering the origin of pain in obstetrics, it is helpful to review briefly some anatomy. The nerve supply of the region is rich. It is supplied both from the sympathetic and the cerebrospinal systems, these furnishing the motor and sensory fibers respectively. The former come from the aortic plexus receiving additions from the solar, renal and genital ganglia to form the large uterine plexus above the sacral promontory. The

great cervical ganglion and the sides of the uterus receive fibers from here. The sensory fibers of the tenth, eleventh, and twelfth dorsal and first lumbar supply the fundus while the second, third, and fourth sacrals supply the cervix. The nerve centers are not so well understood anatomically. A center is supposed to exist in each of the cortex, the medulla and the cerebellum. The lumbar enlargement of the cord probably contains a center and there is good experimental evidence of the existence of a center in the uterus itself. (13) (14) (4)

CAUSE OF PAIN INCIDENT TO CHILDBIRTH

If we correctly ameliorate labor pain we must have a very definite idea of its cause and source from the beginning of labor to the completion of delivery. To summarize the cause of obstetrical pain, in so far as is now understood, it can be grouped under four heads.

1. Uterine contraction.

2. Pressure on the tissue of (or of that adjacent to) the parturient tract.

3. Dilatation of the tract—stretching of tissue and structures involved.

4. Destruction (rupture and pressure) of tissue.

It is at once obvious that there is no great distinction between some of these causes—or at least there is great overlapping—for instance, between pressure and destruction; yet as etiological factors they must be listed, for physiologists tell us that no two sensations can, at one and the same time, be felt.

Pain at the onset of labor and until it is well established is due to uterine contractions. Little or no pain comes from the cervix at this time as dilatation to such an extent has not yet taken place. Neither, (assuming the membranes have not yet ruptured) is pressure of presenting part an important factor in the production of pain at this period. It should be noted here that these contractions are the only example of physiological contraction of unstriped muscle which is painful. (4) Is there as yet some undetermined pain factor here? The pain at this time is referred to the small of the back. As labor proceeds the origin of the pain shifts. In the latter part of the first stage it is due largely to dilatation of the cervix. No doubt some pain originates from pressure and some pain continues from the uterine contractions, but it has been noted that contractions resulting in expulsions are not as painful as those in which no advance of presenting part takes place. The pain now reaches an anticlimax at the moment of complete dilatation of the cervix with complete engagement of the part and beginning pressure becomes a pain factor. There is usually at this time a slight respite and the pain is now referred away from the back around the sides and into the flank where a woman will often place her hands. The pain soon resumes, becomes greater in severity, is referred to the perineum, and at this time the abdominal muscles are put into contraction by a pain reflex from the perineum. Roughly then the pain originates first from uterine contraction; next from cervical dilatation; next from stretching of tract and

pressure on adjacent tissue; then from pressure on the perineal floor and finally from dilatation of vaginal outlet often with rupture of tissue.

THE DURATION AND INTENSITY OF PAIN IN CHILDBIRTH

The duration and intensity of pain in childbirth is as varied as is the character of labors and the behavior of women. If, in choosing a drug or method, these factors are considered, the plans should be as broad, as varied and as subject to change as are other plans for that delivery. Unless some abnormal condition exists the intensity of pain usually bears a very close relationship to the intensity of a contraction. In fact this is so well recognized that the term pain is used to mean either the sensation of pain or a contraction. The rise and fall of a uterine contraction in general is the onset, acme and gradual disappearance of a pain. This phenomenon has been well studied and can be graphically shown in tracings from a manometer which is actuated by a bag inserted in the uterus during labor. Shatz was one of the first to study this and recently Rucker (25) has utilized the method in studying the effects of drugs on the strength of uterine contractions.

NERVOUS MECHANISM OF PARTURITION

Such studies bring us promptly to a consideration of the nervous mechanism of parturition. This can be but briefly discussed here, but an excellent discussion of this subject is to be had in (15) to which those interested are referred. Enough to state here that evidence seems to indicate that the first stage of labor is almost wholly automatic; that the second stage is largely reflex in character (16) and while the brain seems to exert some controlling factor, especially psychic, yet direct connection with this organ is not essential for proper uterine action. And while expulsion of uterine contents has taken place when the cord was severed (17) (18), yet direct connection with the lumbar cord is essential for sustained rhythmical expulsive uterine contractions. In general, anatomical knowledge and experimental evidence bears out clinical observation of delivery of women with cord injuries and the paraplegics, but some discrepancies have not as yet been fully explained.

From what has been said so far it is evident that the amelioration of obstetrical pain presents a different problem, during the various stages of labor; and in different labors, and that this is because its character changes, its origin shifts, and its intensity and duration varies. Moreover, obstetrical needs in the various stages and under various circumstances are totally different. Thus one of the reasons is brought out as to why a uniform analgesia acting similarly throughout labor in routine practice has not been successful. There are some objections to the use of all anesthetics and narcotics in labor, as will be brought out later. In addition, it appears that a factor in the lack of agreement among obstetricians as to the use of or choice of an anesthetic in labor has been due to a failure to appreciate the fact that there are two very distinct pain periods in labor requiring entirely different drugs and methods of handling and that there are two very distinct degrees of anesthesia indicated and of use in obstetrics (X). The two pain periods

are, first: that time elapsing in the latter part of the first stage with the first part of the second stage, and second: the latter part of the second stage. The two degrees of anesthesia are first analgesia (anesthesia to obstetrical degree) and second anesthesia (to the surgical degree). Analgesia is usually all that is needed in the first pain period, often all that is needed until the completion of labor. However, in the majority of cases the deeper degree, (anesthesia to the surgical degree) is needed near or at the completion of the second stage. Rarely is anesthesia in either degree needed for the third stage and it is probably bad practice to use any drug in the first part of the first stage or at least until labor is well established.

In view of what has been said, what are the requirements of anesthetics in labor. I believe these can be briefly summed up as follows:

1. Adequate relief of pain.
2. Non-interference with voluntary or involuntary contractions.
3. Adequate relaxation.
4. No increase in tendency to bleed.
5. Safety to mother and child.
6. No injurious alteration in blood, (chemistry).
7. No injurious effects upon tissue.

In addition to the above the following are desirable features, though not requisites:

DESIRABLE FEATURES

1. Low cost.

2. Not complicated in administration or requiring special training or experience.

3. General practicability—simplicity — ease of transportation, availability of drugs, etc.

When is analgesia indicated? When anesthesia? These can be summed up briefly as follows:

INDICATIONS FOR ANALGESIA

1. Great excitability, nervousness or fear.

2. Excessive pain toward the end of the first stage and the first part of the second stage.

3. Tumultuous, excessively strong, rapid or prolonged contractions.

4. Prolonged labor, with much pain, and some exhaustion, but not necessitating interference.

INDICATIONS FOR ANESTHESIA

1. Any of the conditions not controlled or adequately met by analgesia.

2. Any requirement for complete unconsciousness or adequate relaxation.

3. Any condition necessitating an obstetrical maneuver such as version or forceps.

4. All surgical procedures from perineal repair to section.

5. Excessive or precipitate contractions not otherwise controlled.

WHAT HAS BEEN ACCOMPLISHED IN THE PAST

This is not the time, obviously, to discuss the history of anesthesia, but we can hardly proceed without a brief consideration of what has been accomplished in the past and a mention of the high points of progress made in solving the problem of pain control.

The history of analgesia and anesthesia is almost as old as pain, for from the beginning man's efforts have been directed toward its abolition. Anesthesia in obstetrics has often followed that of surgery—that is, a procedure has been originally developed in surgery and later applied to obstetrical practice. Narcotic potions were used by the ancients. (4) Hypnotism was also used and legend has it that Apollo was born while his mother was under such influence. The first of our modern or accepted anesthetics used in obstetrics was ether. It was used by Sir James Y. Simpson on January 19, 1847. (5) The following November he used chloroform. (5)

Ether	Jan. 19, 1847	Simpson (5)
Ether	Apr. 7, 1847	Keep (in U. S.) (5)
Chloroform	November, 1847	Simpson (5)
Nitrous Oxide	1880	Klikowitch (6)
NO^2 and Oxygen	1881	Winckel (6)
Sacral Block	1885	Corning (7)
Scopolamine and Morphina	1902	Steinbuchel (8)
Quinine-Ether Synergistic	1923	Gwathmey-Davis (10) (11) (12)
Ethylene	1923	Luckhard-Carter (19) Brown (42)

Numerous other analgesics have been at various times used. To mention a few: choral, the bromides, heroin, chloretone, veronal and similar drugs, paraldehyde, amytal. (34) Local anesthesia has been attempted. (3) Hypnosis has been advocated. (19) (20). An ureic compound was quickly found to be unsatisfactory by French obstetricians. (21). While little heard of drugs such as maratik—a composite—has been advanced by Monna. (22)

More recently the use of pantopon has been reported by Carter (23). Of all these only sacral block, nitrous oxide, ethylene, ether, chloroform and morphia with scopolamine, or magnesium sulphate are now used to any great extent, and at a time such as this a discussion limited to these will meet our purpose.

To take up each of the requisites or desirable features of an analgesia in labor and consider how they are met by the several drugs proposed or in use.

PAIN

All of these drugs will relieve pain. Generally, with the exception of sacral block, dosage will determine whether the analgesic or anesthetic stage is reached. They only differ in the mode of action; rapidity of onset, continuance of effects, after administration has stopped and length of recovery stage. Ether, for example, is slow to take effect and is slowly eliminated. Chloroform on the other hand is rapid—a few drops often sufficing to render the patient unconscious—and rapid of dissipation unless a profound degree of anesthesia has been reached. Nitrous oxide

and ethylene are very similar in this respect, though ethylene is unquestionably superior (35) (43) (36). The Gwathmey-Davis method is much more rapid than one would expect from rectal administration of a drug, and if the bowel is emptied and cleansed with an enema the effects soon disappear. Morphia, so efficacious in the first stage, is not always a satisfactory pain ameliorant in the second stage even with the addition of scopolamine or magnesium sulphate. Sacral block (novocain), if its administration has been a success, produces an immediate and profound anesthetic effect which is only dissipated by time. (34)

RELAXATION

Relaxation is important to the obstetrician as well as to the abdominal surgeon. It seems not to be dependent upon consciousness. The relaxation obtained with the sacral block, for example, when full consciousness is retained, is often remarkable. Gas and ethylene on the other hand, with complete unconsciousness, does not always give the relaxation desired or often that degree which is necessary for obstetrical maneuvers, though ethylene is better than nitrous oxide. (X) Ether and chloroform excel these gases in this respect, as well as morphia-scopolamine. The Gwathmey-Davis method is simply the use of ether, morphine, magnesium sulphate and quinine, and the relaxation obtained is better than one would be led to expect from the administration of those drugs to the analgesic stage.

BLEEDING

One might easily be led to believe from some reports that certain observers had failed to take into consideration the maternal injuries and the bleeding characteristic of a few women, when the effects upon bleeding by certain analgesic drugs were discussed. It appears the etiology of bleeding of the newborn has been in some instances erroneously ascribed to drug effects. However, it is safe to say that ether, chloroform and sacral block do not noticeably increase the tendency to bleed either on the part of the mother or the child, but ethylene and morphia-scopolamine have been accused of increasing maternal hemorrhage. I have had intracranial hemorrhage of the newborn when nitrous oxide has been given over a prolonged period of time.

BLOOD CHEMISTRY

This subject, obviously, cannot be gone into in detail at this time. Suffice to summarize the matter by considering the effects these drugs have upon CO^2, sugar, uric acid, lactic acid, and non protein nitrogen. This is better shown in the table below than by a discussion. Attention should be called, however, to the uniform effect of these drugs. They all act similarly in that all blood constituents named above are increased with the exception that the CO^2 combining power is lowered. L. J. Stander has done some valuable and interesting work along these lines and those interested are referred to his publication for complete discussion. (26) Enough to note here that this blood picture is essentially the same as that found in eclampsia and Stander in the publication

referred to reports that a similar blood picture was produced experimentally by administration of a gas low in oxygen. The similar blood chemistry picture after the administration of ether, chloroform, nitrous oxide and ethylene and in eclampsia and in anoxemia is interesting as the chemical character of the drugs is so diverse and the clinical factors in anoxemia and eclampsia wholly different. There evidently is an asphyxiation factor in the production of these blood chemistry conditions. These seem borne out by giving one of the drugs, ether, by rectum. While the blood findings were essentially the same as when ether was administered by inhalation yet for the degree of anesthesia obtained these abnormalities were much less marked. This appears to be a point in favor of the Gwathmey-Davis method of ether administration.

Table No. 1

EFFECTS ON BLOOD CHEMISTRY

(a) Anesthetics

Drugs	*CO^2*	*Sugar*	*Uric Acid*	*Lactic Acid*	*Phosh*	*N.P.N.*
Ether	—	+	+	+	+	+
Chloroform	—	+	+	+	+	+—
NO^2	—	+	+	+	+	+
Ethylene	—	+	+	+	+	—
(b) Hypnotics						
Morphia	+	+	O	=		—
Chloral	—	+	O	O		—
Chloretone	—	+	O	O		—
Paraldehyde	—	+	O	O		—
Veronal	—	+	O	O		+
Amytal	+	+	O	+		—

TISSUE PATHOLOGY

The effects upon tissue, of these various drugs, especially the heart, liver, and kidneys has been well studied and accurately reported. The bibliography is extensive and is no doubt well known to you, but the table below helps at this time to remind us that with the exception of morphia all have, in varying degrees, and in different manners, a deleterious effect upon these important organs. Of all of them chloroform is probably the most dangerous except in small quantities and in the hands of the experienced. (27) (28) (29) (30) (31) (32)

Table No. 2

EFFECTS UPON TISSUE

(a) Anesthetics

Drug	*Liver*	*Kidney*
Ether	Fatty Degeneration	Degeneration
Chloroform	Necrosis	Degeneration
NO^2	Mod. Degeneration	No effects
Ethylene	Mod. Degeneration	No effects

(b) Hypnotics

Morphia	No effects	No effects
Chloral	Congestion	No effects
Chloretone	No effects	No effects
Paraldehyde	Congestion	No effects
Veronal	Congestion	No effects
Amytal	No effects	No effects
Mgs. 04	Fatty changes Hemorrhage	No effects

Table No. 3

COMPARATIVE

Condition	*CO^2*	*Sugar*	*U.Acid*	*L.Acid*	*Phos.*	*N.P.N.*	*Liver*	*Kidney*
Anesthesia	—	x	x	x	x	x—	xx	x
Anoxemia	—	x	x	x	x	x—	xx	x
Eclampsia	—	x	x	x	x	x—	xx	x
Rectal Ether	x—	x—	x—	x—	x—	x—	o	o

CONTRACTIONS

(a) *Involuntary.*

The effect of these drugs upon the involuntary contractions is prompt, uniform and marked. With the exception of ethylene, possibly choral (and after several hours sacral block) anesthetics or analgesics now used in labor cut down the number or the strength of the uterine contractions. The amount of interference, the character and duration thereof varies not only with the different drugs but with the same drug in various labors and other factors influence this interference such as the time during labor administered, and the skill of administration. The effects have not only been rather universally noted clinically but have been studied with the aid of manometer tracings. (33)

The hysterograms show the effects of the most commonly used anesthetics and are representative of clinical observation. (25). In passing it can be said that this effect is sometimes overcome by the use of quinine by mouth, as in the Gwathmey-Davis method, or by some individuals with the use of pituitrin. Quinine increases the number and strength of the contractions while pituitrin not only increases the rate and strength of the contractions but increases the general tonus of this organ and the intra-uterine pressure. (X)

(b) *Voluntary Contractions.*

Contractions of the abdominal muscles in the second stage is probably reflex from a pain sensation in the perineum. If no pain is felt these contractions so necessary for expulsion are cut down. The interference with voluntary contractions are cut down. The interference with voluntary contractions can then be said to be in direct proportion to the amelioration of pain in this stage and degree of consciousness, and for routine clinical purposes one drug is as bad as another in this respect.

SAFETY

(a) *Mother*

Taking all the effects and characteristics of these various drugs into consideration, ether is probably the safest to use. Chloroform is dangerous. (4) (31) (32) Both nitrous oxide and ethylene with oxygen in the hands of a capable anesthetist are undoubtedly perfectly safe. Sacral block can hardly be regarded as routinely safe, while the morphia scopolamine is dangerous only in possibly bringing about an interference delivery with injury, or causing some postpartum nervous symptoms. I regard the Gwathmey-Davis method as being absolutely safe and Harrar (24) in reporting 5800 cases establishes this, I believe definitely. (X)

(b) *Child*

None of these drugs to the analgesic state (obstetrical degree) injuriously affect the child. Morphia, I believe, should not be given late in labor, however. With deeper anesthesia or with prolonged administration the child is put in jeopardy by all. Morphia scopolamine often causes asphyxia, as will chloroform when pushed. No effects are noted from ethylene or sacral block but children with symptoms of intracranial hemorrhage have been delivered of deeply gassed mothers, and I have seen deeply anesthetized babies after repeated Gwathmey-Davis method or prolonged ether administration.

COST. SIMPLICITY. GENERAL PRACTICABILITY

Most babies are delivered in the home and by others than obstetricians. In considering drugs and methods, therefore, we must bear in mind, if the largest number of mothers are to be reached, cost, simplicity and general practicability and those qualities which are to be had only in institutions, with assistants and at increased cost. This eliminates nitrous oxide, ethylene and sacral block. Ether inhalations are too slow, chloroform too dangerous for general routine adoption. The Gwathmey-Davis method is, it appears, the most simple and practicable yet proposed which is safe in unskilled hands and efficient in operation. Its cost is low and it is always helpful and generally satisfactory.

Table No. 4

	Ether	Chloroform	Nitrous Oxide	Ethylene Scopolamine	Morphia Block	Sacral	Quinine Ether Oil Synergistic Method
Pain	*G	G	G	G	G	G	G
Contractions—							
Voluntary	B	B	B	G	B	B	G
Involuntary	B	B	B	G	B	B	G
Relaxation	G	G	B	B	G	Gx	G
Bleeding							
Safety—							
Mother	G	Bx	G?	G?	G	G	G
Child	G	B	G?	G?	Bx	G?	G
Blood Chemistry Rel	B	B	G	G	G	G	G?

Tissue Pathology Rel	B	Bx	G	G	G	G	G
Cost	G	G	B	B	G	G	G
Simplicity of Administration	G	G?	B	B	B?	B	G
General Practicability	G	G	B	B	B?	B	G

*G=Good—Satisfactory action on
B=Bad—Undesirable results

SUMMARY

Ether

Ether relieves pain both in the analgesic and anesthetic stages. It does not noticeably increase a tendency to bleed. Within range it is safe for both mother and child. It is cheap, simple of administration and generally practicable. It does, however, promptly cut down the number and force of contractions. It is slow to take effect and the recovery stage is long. Its effect upon blood chemistry is the same as other inhalation anesthetics and while not having as marked an effect upon tissue as chloroform, yet it cannot be said to be wholly without effect upon the heart, liver and kidneys. (26) The relaxation is good even in the analgesic stage and it may be administered by inhalation or per rectum.

Chloroform

This drug is probably used more in obstetrics than any other. Its rapidity of action, short recovery stage, simplicity of administration, together with the fact that it relieves pain promptly, has been responsible for its popularity. Chloroform however is a dangerous drug (4) (31) (32), and its administration has a marked effect upon tissue pathology which is often delayed and it cannot be safely used in many conditions such as eclampsia. (26) No increase in bleeding has been reported and the relaxation is excellent, but it very promptly and effectually cuts down the uterine and voluntary contractions.

Nitrous Oxide

The administration of this gas requires the services of an experienced and capable anesthetist—often for a prolonged period of time. The lack of general practicability and simplicity of administration, and its cost prevents general routine adoption. That it is an efficient analgesic there is no doubt. When properly administered with oxygen it is safe for both mother and child. It has, however, an immediate and marked effect in cutting down contractions but increases bleeding during administration. (11) The relaxation is also not equal to that obtained by the use of ether and chloroform (X) It is free of bad effects on tissue and the effects upon blood chemistry are largely limited to those found in any anesthetic where anoxemia is a factor.

Ethylene. (41)

Ethylene has not been used as much since its introduction by Luckhardt in 1923 as one would be led to believe, considering the general all round satisfaction it gives. (43) One reason perhaps is that, like gas, it must be administered by a capable anesthetist. It relieves pain promptly

and the recovery stage is short. It does not, fortunately, interfere with contractions as much as do the other anesthetics. (15) While it is probably safe to mother, child and labor (40), the relaxation while better than gas (43) is not equal to that obtained with either chloroform or ether. (X) Several have reported a tendency to capillary bleeding and nausea, (39), but its effects upon tissue are nil and on blood chemistry limited to those of anoxemia, which is unnecessary. Its cost is high, (7 1/2 cents a minute) (43); its odor unpleasant; it may explode and its contamination with carbon monoxide has been reported. (39) As regards life, it is much safer than nitrous oxide. (43)

Morphia Scopolamine

Probably no system of analgesia in childbirth ever obtained such universal and immediate attention as did this method—the so-called twilight sleep. The great hopes held out have not been realized and while capable obstetricians still use the method, either as originally proposed, or with their own modifications, and while these drugs are still much used, yet the method as a whole has not been successful. (4) (X) Their action in the first pain period is good, especially in obtaining relaxation. The administration is simple, generally practicable and cheap, yet it cannot routinely be carried out with satisfaction through the second stage. There is too often an increased morbidity brought about by necessitated instrumental deliveries and an asphyxiation of the baby has been reported. (24) There is too often an increased tendency to postpartum hemorrhage and a nervous effect upon mothers has been noted in the puerperium. (X) Its effects upon tissue and blood are without danger and it can be often used to advantage in selected cases.

Sacral Block (Novocain)

The use of a drug such as novocain intraspinally at first glance would seem simple and safe, but after trial it cannot be recommended for general routine adoption. (X) Entering the canal is not always easy, sure, or devoid of certain dangers when a woman is in labor. The relief of pain is prompt and complete. The relaxation obtained is often remarkable. It is safe for the child unless it necessitates delivery or interference. There are only minor effects upon tissue and blood but the immediate and complete inhibition of contractions, at least for a period of time, is a characteristic which largely limits its use. (34)

Gwathmey-Davis Method

This is the synergistic use of quinine-ether-oil retention enema preceded by the use of morphia with magnesium sulphate. It has been extensively used at the New York Lying-In Hospital and the results have been reported. (10) (11) (12) (24). Magnesium sulphate, quinine, ether and morphia are the essential drugs and the method is regarded as perfectly safe. Quinine overcomes the inhibition of ether on contractions and magnesium sulphate acts well with the morphia. It is cheap, simple of administration, and generally practicable. The relief of pain is adequate in ninety per cent of the cases—and can safely be augmented by ether inhalations or repeated if necessary. Its effects upon tissue are limited and as no asphyxia factor is involved, its effects upon blood

chemistry are not as great as when ether is given by inhalation. It does not noticeably interfere with labor or necessitate instrumental delivery. Experience with the method however is necessary if results obtained are to be what is desired. Though simple, each step must be carefully and accurately carried out and of prime importance is correct timing of administration. (X) It cannot be given if any colon or rectal trouble exists. No increased bleeding has been reported and the relaxation obtained is good, though not enough for obstetrical operations, as usually no deeper degree than the analgesic state is obtained.

CONCLUSION

What then do we get from our consideration of this problem so far?

What has been the experience with the use of these drugs in obstetrics? To take up, first, the undesirable features of these drugs as a group, I believe it can be accurately said that the amelioration of pain by any of them, in any manner employed, interferes with labor. That the amelioration of pain in childbirth is purchased at the sacrifice of normal physiology and delivery; interference of varied importance and to varying extents it is true, but interference nevertheless, largely with voluntary or involuntary contractions and to a lesser extent with health or safety of mother and child. Some agents interfere in one way—some in another. The effects of some are immediate, of others tardy or remote. Experience differs and opinion is much at variance, but after personal experience and observation of the results of others, I am convinced that a painless labor too often results in an interference with delivery or one resulting in injury to the mother or child. This then is the problem. Anesthesia to some degree is sometimes obligatory, often is needed and as a rule very helpful and desirable in labor. Yet the drugs and methods we have, may and often do, jeopardize the safety of our two patients or interfere with the delivery. The problem is not insurmountable for the degree of interference is in proportion to the degree of anesthesia administered; the drug used; the method employed; the period in labor when used; and the skill and judgment shown by the operator. In the correct balancing of these factors, therefore, lies our solution. No anesthetic should be employed without a clear understanding of its effects upon mother, child and labor; without a clear and definite indication to be met; and any plans made for the amelioration of pain in a given labor should be as well thought out, as well understood, as broad, as safe, and as capable of immediate change as are the other plans and arrangements made for that delivery. We should ever bear in mind the severity, duration and cause of the pain as well as the several effects and characteristics of the drug to be used. Failure to remember that there are two distinct pain periods to be controlled and that we have several agents to work with, and that we can manipulate these to varying depths of anesthesia has contributed to many a failure erroneously ascribed to the drug or method used. Morphine, with scopolamine or magnesium sulphate, for example, is an excellent drug to control pain. But its use very early in labor often stops it and very late in labor fails to meet the requirements or is dangerous to the child. Success with it depends upon its use at the

right time during a labor. Other examples of certain unsatisfactory results with good agents but improperly handled would be; use of ether or chloroform early in the first stage; to attempt difficult obstetrical maneuvers with poor relaxation either due to insufficient anesthesia (with any drug) or use of a drug not giving good relaxation (such as nitrous oxide); the use of ether where rapid action and short recovery stage is indicated; or the choice of gas or ethylene where an anesthetist was not available, etc. In other words, it does not appear that any drug or any method can be advocated for the control of pain of childbirth and recommended for general routine or universal application. Each and every delivery must be considered individually; the conditions to be met accurately foretold, and the use of a drug or method should be the result of a carefully thought out plan to meet the conditions presenting themselves. However it is obvious that even when working under such varying conditions a large proportion of labors will fall into one class, others into another class. A large series of cases will tend to group themselves in so far as indications for analgesia are concerned. This fact permits us to make some general plans and draw a few broad conclusions. For instance there is a large group of cases that immediately occur to us, where morphine with scopolamine or magnesium sulphate will safely and adequately control the pain of labor until late in the second stage and where gas or ethylene given at the peak of each succeeding pain and deeper just as the presenting part is born, ideally meet the situation. A variation here, mixing some ether with either of these gases, during the last few minutes, meets another class of case that immediately occurs to you. Then there is the large class composed largely of normal multipara who need only slight analgesia in very short periods at the completion of the second stage. Here a little chloroform is excellent, if safely administered. Then there is that group of cases, fortunately not large, where prolonged and deep anesthesia is a necessity. Here ether inhalation has no superior. But the largest group of all is that group necessitating just an analgesia over a prolonged period of time with probably a deeper degree just as the presenting part is born or repairs made. This period is often of several hours duration. The women are primipara, or multiparae who are nervous, fearful of the ordeal, apprehensive and complaining. The labor is normal, or at least not so abnormal as to necessitate interference, but prolonged, painful and exhausting. Here in my experience is where a properly handled Gwathmey-Davis method is indicated and the best yet proposed. It is simple, safe and economical. It can be administered by any doctor and its benefits can be secured by over ninety per cent of women. Its effects can be dissipated if desired. It can be safely repeated or continued. Owing to the quinine, effects of the ether upon the uterine contractions are largely, if not completely, overcome. As only analgesia is reached, the voluntary contractions of the abdominal muscles in the second stage are not cut down. Only well known and safe drugs are employed and it has had extensive enough use to bring to light any undesirable features that might exist. (24)

We have then in these various agents and methods a solution of the problem of pain in childbirth just about as satisfactory as we have in many other major medical problems, and practically as universal of

application, as for example, tuberculosis, cancer or pneumonia. That our present methods can be and will be improved there is no doubt. None is ideal. Our failures have been largely due to poor judgment and faulty technique; a failure to study the conditions to be met and the characteristics of the drugs we have used. Prejudice, and our not taking the problem seriously, has played a part.

There is a valuable, as well as legitimate place for a well chosen and properly administered, and conservatively used analgesic in labor. In so far as it is compatible with safety to mother and child, it is indicated. Let us then use analgesic methods more; let us choose them carefully and conduct them properly. And carefully record our experiences and report them. For the improvement of our art and the benefit of the mothers of this country.

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DISCUSSION

Dr. J. E. Kerr, Winston-Salem: In my discussion of Dr. Watkin's paper I do not want to speak harshly or inadvisedly for he has given us a fine paper, but I am almost an Honorary Fellow in the Society now and I feel like after many years of experience a fellow does make some good observations on his own behalf.

I note two outstanding things in his paper: he is a painstaking obstetrician and an honest investigator. He admits that most of the things he has suggested for the "Amelioration of Pain in Childbirth" are done at the sacrifice of your patient, and this admission on his part makes me feel more kindly toward him, and I want us all to weigh the suggestions offered in the improvement of modern obstetric practice.

There are a lot of young men in the audience who are looking to us for help and guidance and they will follow the lead of such men as Dr. Watkins. It therefore behooves us not to advise too advanced methods in the practice of obstetrics. I also received instructions at the Lying-In Hospital of the City of New York under Drs. Gwaltney, Davis, McPherson and Kosmac. They are all great men, but I did not start the use of Magnesium Sulphate treatment in obstetrics until I wrote to Dr. Davis for advice about its use. He informed me that they were using it routinely in the Lying-In Hospital. After this reassurance I began to use it in a limited way, because I had a limited amount of obstetrics, but I got into more complications with both mother and child during the time that I used the treatment than I had ever had before with any other treatment. It might have been my fault and not the treatment or it might have been a co-incidence. I want to ask you to be careful, you younger men, as you endeavor to answer this call that the public is demanding of you to produce painless labor and do advanced obstetrics.

I do hope that you will be conservative and stick more or less to the trodden paths in obstetrics. It will be safer for you, it will be safer for the mother and safer for the child. I want to advance with my profession, but I am in doubt as to the advisability of much that is offered for painless relief of labor, and I feel like if you and I do not stand in the

way of these things the public has no protection. Therefore, if you are a good doctor, faithful to your trust, you will object to these things, and I want to watch this one thing, as it is one among the many measures that are appealing to the public, as they cry out for the latest painless deliveries.

I want to watch and see if this does not pass the same way that all the other wonderful things that have come and gone. I just want to keep Drs. Davis and Watkins in mind, to see if this method is as routinely practiced, by them, in twelve or twenty-four months as it is today.

Dr. Ivan Proctor, Raleigh: I want to first compliment Dr. Watkins on his excellent analysis of this subject. It is really the best analysis that I have heard or seen in the literature. He takes up each and every one of the anesthesias and gives you the good and bad points, and he expresses the bad points generally in the interference with normal labor.

I have used all of them, not excessively, the quinine ether oil less than any. I have gotten in the habit of using other methods. I think the ether oil is an excellent method and in the few cases that I have used it the results have been satisfactory. I expect to employ it more.

One thing detrimental in the use of anesthesia is the belief among some of the profession and laity that labor can be made painless. If we stay away from that I think our use of anesthesia is certain. Patients come to me and want to know if I can give a painless labor. I tell each one that I cannot promise a painless labor but my policy is to relieve all the pain of labor that is possible with perfect safety to the mother and child. We cannot use a routine: each and every patient is an individual and must be treated individually. If we do not try to accomplish painless labor but try to relieve the unnecessary pain of labor I think we will go forward.

Dr. Carlie R. Young, Angier: I would like to ask Dr. Watkins the objection to chloroform as an anaesthetic. As a country practitioner I resort to that more than anything else, and I would like to know what the objectionable part of chloroform is.

Dr. William Dewar, Raleigh: Personally I have not used much rectal anesthesia of the Davis type. The few cases on which I have used this method I have found very satisfactory, and I believe that the conclusion that Dr. Watkins has shown will make more of us use it. In a recent communication with Dr. B. C. Hurst of Philadelphia, who is one of the outstanding obstetricians of today, he states that this method is the safest and most efficient method of alleviating the pains of childbirth.

Dr. Brodie C. Nalle, Charlotte: Dr. Watkins shows that he has gotten most satisfactory results in a large percentage of cases, and what he terms good results in a still larger percentage whereas his percentage of unsatisfactory results is extremely small. In my opinion, after having used it for several years almost exclusively, this method of anesthesia offers us much better results than any other method that I have used heretofore. It interferes less with uterine contractions than any other method of anesthesia. It seems perfectly safe so I accept it as a great boon and expect to continue the use of it until something better is presented.

Dr. John Watkins: The discussion has been largely centered on the quinine ether oil analgesia so, except to answer several specific questions, I will confine my remarks to this method. To take the points brought up seriatim:

To the gentleman who asks why the large number of failures of this method in my personal series. I believe it was due to my failure to carry out the details. I am not having the same trouble now. One mistake is not emptying the lower bowel completely. Another is to use the method too soon in labor, particularly in primipara ones. And also giving it too late in multiparae. One should be sure that no colitis, hemorrhoids or rectal condition exists as the enema is very irritating under these circumstances. It is simple of use but like anything else in medicine you must learn by experience just how to do it to obtain the expected results. To the question about atropine. I use it and I believe I get results when so combined with morphia and magnesium sulphate in obtaining relaxation though I know of no literature, or any other one's experience, and can not produce evidence to back this belief up.

The next question. Can we promise women painless childbirth? I don't think we can; and I wouldn't promise her this if I did think so. If we stop pain we may stop labor. I mean totally abolish pain. A painless labor is often an interference delivery. It appears that painful cervical dilatation stimulates uterine contractions in the first stage and that the expulsive efforts of the abdominal muscles so necessary in the second stage are in a large measure due to a pain reflex originating in the perineum. I think also that the sensation of pain on the part of the mother helps her work with us. However, I think we can, and are justified, in taking the edge off the pain and the bulk of the suffering out of a delivery. Why do I object to chloroform? Because under ordinary working conditions it is unsafe—either immediately or by late effects. I say ordinary conditions because of personal knowledge and experience. Under extraordinary conditions—where we have the expert anesthetist, the nurse, the hospital, etc. I don't know. Some experienced and capable men use it with good results. We turn an anesthetic over to a nurse, a relative, an assistant, an interne—people whom we wouldn't dream of trusting with any other such important act. I used chloroform for years. Still use it. It has a number of qualities as I mentioned in my paper but we are here discussing good and bad qualities and I believe that in the ordinary hands and under usual circumstances chloroform is dangerous. To get back to the ether oil method: The general practitioner delivers most of the babies and I guess he always will. Most of us know by experience what general practice means. I do. If we are sincere in our endeavor to relieve woman of the pain and suffering of childbirth we must work along analgesia methods, lines which are safe, efficient, practicable and easy of administration, if such methods are to be of any value or use to the doctor, or available to the great bulk of childbearing women. I do not prefer this method to all others. For that matter I have no preference for any one method. I use them all at times and try to pick the best for each case. Ethylene or gas is fine, preceded by morphia, but how many doctors can carry a tank around with them and have an expert anesthetist assist him several hours? What proportion of mothers can

pay for this? What proportion go to a hospital? I believe in the quinine ether oil method because the most doctors can use it; or rather the most mothers receive it; because I am convinced it is safe for mother and child; because it is simple to prepare, of little cost, very practicable under ordinary general practicing conditions, and because it does help the women bear this cross of childbirth. I believe in an analgesia in labor and in so far as is compatible with safety and good obstetrical technique its use on the part of the obstetrician is to a large measure obligatory.

A STUDY OF THE PELVIS IN RELATION TO OPERATIVE DELIVERY

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In deciding upon a subject for this meeting, a study of the pelvis was selected for two reasons. First, because it is a common belief among the laity and some members of the profession that obstetrical patients do not require as intensive study and accurate diagnosis as do patients in other branches of medicine and surgery. Second, because coincident with our realizing the pathogenicity of parturition, we have passed from an era of conservative obstetrics into one of operative delivery.

Obstetrics today stands foremost among conditions causing premature death. Childbirth mortality is second only to tuberculosis in women in the reproductive age. North Carolina sacrifices 640 mothers and 7300 babies yearly. What is the cause of this high mortality? Do we need a new method of caring for pregnant women? Are we lacking in a satisfactory technique for delivery, or should we substitute a new process for nature's old time labor?

The artificial termination of pregnancy has become so prevalent with the obstetrician in the delivery room, the general practitioner in his work, and the surgeon in the operating room, I think it is time for us to hesitate a moment and take inventory of the indications for operative delivery. Why this great increase in operative obstetrics? Is it due to the physician's hurry and demand to shorten the process? I think not. On the contrary, it is largely due to the demand of the laity for action and the termination of pregnancy. Many women expect and almost demand of their attendants the same relief of pain and shortness of labor that the occasional woman receives under the most specialized surroundings.

Time and time again we hear women say that their physicians allowed them to stay in a previous labor for twenty-four hours, as if labor could be terminated at any time without risk to mother and baby.

The methods that have been worked out by skilled obstetricians for relieving pain and shortening labor are not devised for routine use under ordinary conditions. On the contrary, they are adaptable as other highly technical surgical procedures for special cases under suitable surroundings.

Nature has been so gifted in her ability to cope with the problems of pregnancy and labor that it has not been the custom to thoroughly examine and study every case as if it were potentially a difficult one. Without this prenatal study, pathology affecting labor is rarely recognized until progress is unsatisfactory or an attempt at delivery fails. This produces more serious complications and then in a desperate effort to save mother and baby we may resort to measures that are ordinarily contraindicated.

If we practice preparedness in every case it will take a little more time in the beginning but we will be ready for the emergency at the dangerous period of labor and many a woman will be saved a perilous and often fruitless attempt at motherhood.

The study of the bony pelvis itself is usually looked upon as pelvimetry alone but it embraces a much larger field. It includes the problems of disproportion between passage and passenger that may arise in any patient; the relation of the particular pelvis to the patient; the relation of that pelvis to labor complicated or uncomplicated, whether it be the first, second or third labor, and the relation of the pelvis to this particular labor when there has been previous difficulty or stillbirth.

Let us consider the subject of pelvimetry. Each pelvis is different and presents a new problem, the solution of which may call for serious study, investigation, knowledge, and skill. It is amazing how we practice obstetrics without giving the size of the passage and passenger a thought before the journey is started. Like many other examinations of the human body, pelvic measurements do not make the diagnosis or solve the problem but it gives us knowledge of our patient and the possession of these facts often give command of the situation.

It is a well known fact that fetal mortality in general contracted pelvis is considerably higher where there is delivery of the after coming head. Therefore, there is an advantage in having the pelvic measurements made and type of pelvis classified before labor sets in. We would not so readily do a version on a slowly rotating or persistent occiput posterior in a justo-minor pelvis as if the measurement were normal.

Contracted pelvis is such a common condition among both white and black that it behooves every physician practicing obstetrics to painstakingly measure and study the pelvis so that he can make a prenatal diagnosis and institute desirable treatment as in other branches of medicine and surgery.

The bad results obtained in the practice of obstetrics are not so much due to an operation unskillfully performed but rather to an ill advised form of treatment. Williams has found contracted pelvis in every thirteenth white woman and every third negro. Six per cent of 2,750 consecutive patients has a contracted outlet. Burgess found over ten per cent of 18,000 patients with contracted pelvis.

In a review of 400 records we found thirty-one true conjugates nine cm. or below; thirteen transverse diameters of the outlet below eight cm. More than ten per cent of the records examined showed a contracted pelvis. There is a difference in opinion as to whether the greatest number of contraction involves the inlet or the outlet. Our experience, however,

would favor a larger percentage of inlet contractions in the form of simple flat non-rachitic pelves.

Some may say that the greater part of these pelves show the lesser contractions and therefore do not deserve serious consideration. That is a point that I wish to make. The lesser contractions give the greatest amount of trouble because they are not found until labor is established and the patient gets into difficulty.

The generally contracted pelves are usually seen in small individuals and show a slight shortening of all the diameters, internal and external.

The simple flat non-rachitic pelvis resembles the normal except that the true conjugate is shortened one-half to one centimeter, due to a sinking downward and forward of the sacrum.

The masculine group includes the funnel and high assimilation pelves and is characterized by a reduction in the transverse diameter of the outlet.

Sixty-one per cent of all gynecological surgery is due to bad obstetric results. The contracted outlet cases furnish a large proportion of this work. The narrow transverse diameter forces the head to make its exit through the posterior or rectal triangle which often results in extensive rupture of the pelvic floor. Occasional forceps delivery in this type of pelvis will end by a complete laceration, especially when the outlet contraction is unrecognized. These cases add many women to our list of chronic invalids. The outlet of the pelvis is diamond-shaped and made up of two triangles whose bases meet in a transverse line between the tuber ischii. The anterior or urogenital triangle is bounded by the rami of the pubis, the apex being the symphisis and the base the transverse line as stated. This triangle receives the injuries in normal labor. The posterior or rectal triangle has its apex at the tip of the sacrum and its sides are composed of the levator and coccygeus muscles, superior and inferior pelvic fascia, all of which yield to pressure. The apices of both triangles and the sides of the anterior triangle are fixed and immobile.

When the transverse line between the tuber ischii is less than eight cm. the outlet is contracted and if labor is to terminate spontaneously the contraction must be compensated for by an increase in height of the posterior triangle which is called the posterior sagital diameter. The antero-posterior diameter of the outlet is 11 cm. but the anterior sagital diameter (the height of the anterior triangle) takes up 5 to 6 cm. of this distance. When the transverse diameter of the outlet is contracted the anterior sagital is of little importance because only a small, if any, part of the fetal head can escape anteriorly to a line between the tuber ischii. Therefore, the posterior sagital, that diameter represented by a line running from the transverse line between the tuber ischii to the tip of the sacrum, is the important measurement. Since the child's head must escape in the triangle posterior to the line between the tuber ischii, the posterior sagital diameter must be increased in proportion to the contraction of the transverse diameter of the outlet. Therefore, with a transverse diameter of eight cm. the posterior sagital must compensate and be seven and one-half cm. If the transverse be six cm. the posterior sagital must be nine and one-half cm. The sum total of the two diameters should be fifteen and one-half cm.

Caesarean Section, a method of delivery frequently employed today as a life saver has gone through remarkable stages of development. First done 700 years before the birth of Christ on women dying late in pregnancy, it has progressed from almost 100 mortality to the place where only one woman out of ten loses her life. There seems, however, to be an impression in the minds of the laity and some members of the profession, that Caesarean Section is a perfectly simple and safe operation which can be guaranteed to give good results in all circumstances. This is a false impression. The fact that abdominal surgery carries with it a risk to the life of the patient under the best circumstances, sometimes seems to be lost sight of in an effort to relieve a suffering woman of her baby in the quickest and easiest way. Many operators who do not pretend to have even a working knowledge of the obstetric art, seem to accept this method of delivery as a cure for all obstetric ills. Caesarean Section on the contrary is not an operation or method of delivery to be considered lightly.

Let us review for a moment the facts. Laparotomies may be performed for various causes with less than one per cent death rate. Caesarean Section, however, under the best care, always takes its toll of three to five per cent.

In the city of Detroit the maternal mortality in Caesarean Section is thirteen per cent, the fetal mortality eleven per cent. One hospital there reports six Caesarean Sections for contracted pelvis and not a measurement was shown on the histories. Mortality in those cases whose history failed to show any indication for Caesarean was 17.5%. Out of 10,425 deliveries there was one Caesarean Section for each 67.7 cases.

The mortality in patients with definite contraction was five per cent, while in eclampsia it was 42.7 per cent. The mortality in high or classical Caesarean Sections was thirteen per cent compared with nine per cent in the low cervical operation.

The State of Massachusetts reports one out of every seven maternal deaths follow Caesarean Section. Lynch of San Francisco reports 32 Caesarean Sections in 6,500 labors, one Caesarean Section out of each 203 deliveries, while a fellow physician did 240 Caesarean Sections in 4,000 labors, one out of every 16 deliveries.

The frequency of Caesarean Section in North Carolina varies considerably in the different practices and in different hospitals. One obstetrician says he has in his practice indications for Caesarean Sections once in 500 cases. Another obstetrician reports four Caesarean Sections in 50 deliveries. A third physician says he finds indications for Caesarean Section in one per cent of his cases. One hospital reports ten Caesarean Sections in 587 deliveries during 1925-26; another thirteen Caesarean Sections in 309 deliveries during 1925-26, while the third reports twenty-five Caesarean Sections in 199 deliveries during the same period. Thus we have the frequency varying from one Caesarean Section in 58.7 deliveries in one hospital to one section in 7.9 deliveries in another hospital.

Our series show three Caesarean Sections in 40 deliveries. Case number one has a lesser contraction of the pelvis whose confinement probably would have terminated spontaneously had the patient's heart been capable

of withstanding the strain of labor. She had both mitral and aortic disease with a systolic pressure of ninety mm., a pulse pressure of ten, and a history of decompensation. We did a low cervical section at term under novocaine with excellent results for mother and baby.

Case number two was a well developed primipara with external measurements as follows: Spines twenty-five; crests thirty; trochanters thirty-four; right oblique twenty-four; left oblique twenty-three; external conjugate twenty. These measurements almost prompted the statement, "Well, you will go through without any trouble," but experience had taught us better. The true conjugate proved to be 7.5 cm., and the transverse of the outlet seven. We did a low cervical section after six hours of labor; both mother and baby did well.

The third patient was one of those unfortunate eclamptics whom we should have left alone although the baby survived nine convulsions and was in excellent health when a year old.

In our series there were forty-four contracted pelves. All mothers terminated their labor in good condition and convalesced in the normal length of time. One baby died as a result of delivery through a contracted inlet. This patient, a twenty-six year old primipara had the following measurements: Spines twenty-one; crests twenty-seven; trochanters thirty; obliques twenty-one; circumference ninety-one; external conjugate seventeen; true conjugate 8.5; transverse outlet eight. There was early rupture of the membranes; manual rotation of persistent occiput posterior which engaged. After thirty hours the fetal heart was irregular and forceps were applied. Delivery was moderately easy but the seven and one-half pound male fetus died.

Had the occiput not been posterior this patient would probably have delivered in normal length of time. Had we disregarded the fetal heart and given more time the baby might have survived. We were criticised for not doing a Caesarean Section after the occiput failed to rotate but the patient had been in labor twenty hours with ruptured membranes and we could not find enough disproportion in our opinion to prevent delivery. Two years later this patient delivered an eight and one-half pound baby easily.

There are many other such border line cases that require accurate measuring, good obstetric judgment as to the pelvic capacity and as to the amount of disproportion in the individual case. Unfortunately we cannot estimate the amount of elasticity of the fetal head. In deciding upon interference we must always make careful study of the individual mother and the particular baby, and remember that seventy-five per cent of all contracted pelves will deliver themselves if given time, food and support in the form of quiet, morphine and scopolamine. The other twenty-five per cent of patients require and deserve the very best knowledge, care and skill that the medical profession affords.

In our series, five babies developed signs of cerebral hemorrhage. One a premature infant delivered after induction on account of a preeclampsia, did not show any definite signs and the hemorrhage went unrecognized for several months. Another baby apparently normal in every way except a club foot began to show signs in the fourth week and died at six months. The other three babies were treated by lumbar punc-

ture when the first symptom appeared and repeated drainages were made until the spinal fluid was clear. These all made excellent recoveries.

The striking thing about these cerebral hemorrhages was that none of them occurred in contracted pelves with disproportion and none followed forceps delivery. The premature case was delivered by version and the baby that died at six months was delivered following insertion of bag on account of long first stage.

In conclusion, it is our policy to give every patient a thorough physical examination including careful history as to rickets, scurvy, and infectious diseases, history of previous labors, length of time, size of baby, kind of delivery, and stillbirth. The pelvic study includes external and internal measurements, transverse diameter of the outlet and posterior sagital diameter if the transverse is below eight cm. We study the general capacity of the pelvis, the curve of the sacrum and depth of the symphisis. As the patient approaches term this study is continued to include size and position of the baby, the presentation, whether or not the presenting part is floating or has entered the pelvis, any over riding of the symphisis, and an estimate of the amount of disproportion.

A test is made to see if the head can be forced into the pelvis.

Labor is conducted so that Caesarean Section is not contra-indicated on account of vaginal examinations or repeated rectal investigation. Border line cases are not induced by intra-uterine manipulation because delivery begun per vagina should be completed by that route. We watch closely for post-maturity and induce at term with castor oil and quinine when possible.

Our general rules for Caesarean Section are as follows:

In true conjugates eight to nine cm., test head in pelvis under anesthetic if necessary. If no evident disproportion give test of labor without examination. If head engages give time, use forceps if necessary. If no engagement after test, do low cervical Caesarean. Use local anesthesia.

In true conjugates seven to eight cm., unless there is a premature baby that can be forced into the pelvis, prepare for Caesarean Section before labor or soon after labor begins.

Contra-indications to section, especially the high or classical type:

1. Ruptured membranes more than twelve hours with active labor and examination.
2. After vaginal examination through unprepared field or after repeated examinations.
3. After induction of labor, except by castor oil and quinine.
4. After vaginal manipulation or attempt at delivery.
5. In frankly infected cases.

The doctrine of once a Caesarean always a Caesarean does not hold unless the original indication is absolute or persistent. The incidence of rupture of the uterus in patients with previous Caesarean is only two to four per cent while the best Caesarean mortality rate is four to ten per cent. There is little danger of rupture of an uterine scar if the wound has been well sutured and no infection followed. All such cases should be delivered, however, in a hospital under good observation.

The best results in obstetrics does not depend upon the skillful performance of one or more operative procedures but rather upon a thorough

understanding of the physiology and mechanics of normal labor and the logical dealing with whatever condition may be present, based upon that first principle of all treatment which is —"do no harm."

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DISCUSSION

Dr. Geo. W. Johnson, Wilmington: Mr. President: Our pre-natal care consists too much of merely examining the urine and taking the blood pressure. There should be included careful internal and external pelvic examinations and this is especially true for primiparae and those who have had trouble in previous labors. A person with a contracted pelvis should be rechecked about four weeks before term.

Dr. Proctor's point about the narrowed transverse diameter is very important and is one that few text-books stress. A patient with an acute angle of the pubic arch, as a rule, makes very slow progress after she is about two-thirds dilated and in these cases one has to be very guarded about giving the family or the patient an opinion as to how much longer she will be in labor.

Caesarean Sections are, in my opinion, too much on the increase. We have here an operation that is spectacular and relatively easy but which carries with it a too high mortality and morbidity. Certainly one hundred and twenty-five Caesarean Sections in five hundred cases lead us to believe that the operator here is inclined to be spectacular or is lacking in the obstetrical art. I have delivered three women by the normal route

who previously had Caesarean Section, and had no trouble with any of them. These patients should always be in a hospital.

As to the question of high forceps, I do not use them, possibly because I have been drilled as to the danger attending their use.

Dr. J. S. Brewer, Roseboro: The essayist's emphasis on the proper study of the pelvis before the time of labor is appropriate. I think the obstetrician ought to have an idea long before the delivery, as to the possible type of delivery the patient will require. That can only be accomplished by a proper study of the pelvis and also a proper study of the size of the baby. The size of the passenger must be compared to the size of the passage. That applies especially to the border line type of pelvis. In primipara usually two or three weeks before labor the head goes into the pelvis, in succeeding cases not until labor has started, and in a border line case the second or third baby may fail to go in to the pelvis. It will not do to say that the pelvis is all right just because the first baby passed through. We all know there is a tendency for the baby to get larger and larger in succeeding pregnancies. A woman will start with a baby of seven pounds, then have one eight pounds and run on up. If we fail to compare the baby to the pelvis we may get into trouble especially in the later pregnancies. If we study the case beforehand and know the size of the baby we may wish to induce labor before term to get the baby through that particular pelvis.

As to the question of Caesarean Section, I agree with Dr. Proctor and Dr. Johnston—there are too many Caesarean Sections being done. It takes courage sometimes to wait in the case of contracted pelvis but you will be amply repaid. If you have a case of contracted pelvis give the head opportunity to mold and after, sometimes, ten or fifteen hours that head may mold and enter the pelvis and labor will progress normally.

Dr. John Watkins, Asheville: We need this kind of literature. I believe there are sections done that are unnecessary. I believe that many are done because it is a simple surgical procedure and an easy way out of trouble, and without a full realization as to the seriousness of the procedure and the general mortality rate therefrom. Obstetricians have in some instances been blamed for this. In general this is unjust because many cases go from general practitioner to surgeon and the latter, though skilled and capable, is often without sufficient obstetrical knowledge to know when to do a section and what type of section to do. Many cases undoubtedly are improperly handled in the beginning before they were taken to the surgeon. Such conditions run up the mortality rate. A more careful physical examination of the women; better prenatal care and careful follow through the period of gestation is indicated. Entirely too much reliance is placed upon the external measurements of the pelvis and an estimate of the size of the child rarely appears in the history. The bis-ischial and posterior sagital measurements are not given much attention. Too much reliance is placed on section as a way out of eclampsia, and I regret to say there are some left to whom the Caesarean Section still holds a glamour.

Dr. Ivan Proctor: The purpose of this paper was to stress the importance of prenatal study and particularly prenatal study in refer-

ence to the pelvis. As had already been said, the external measurements are not important but they help to classify the type of pelvis. The amount of relation between passage and passenger is the important question. The study of the capacity of the individual pelvis with the knowledge gained by repeated internal examinations is of great help in deciding upon these cases. In reference to the number of Caesarean Sections done, I did not mean to criticize the work that had been done at any particular hospital but only meant to bring the question up for consideration to learn if our tendency is to go in the right or wrong direction. We cannot depend very much upon statistics because they do not tell the type of cases, which might have been in some instances a group of complicated ones. The statistics, however, indicate that we are drifting to Caesarean as the easiest and quickest way to get out of obstetric trouble, but this operation does not prevent future trouble.

I want to thank all the gentlemen who have discussed the paper and recall that there are so many different ways of treating patients and getting good results, that it does not pay us to criticize the other man's form of delivery or work.

EXPERIENCES WITH THE KIELLAND FORCEPS

By Dr. Robert A. Ross, Durham, N. C.

One of the most inspiring, striking, and impressive things is to see man's ingenuity and efforts combat and overcome the complications, exigencies, and difficulties that are encountered in this most exacting profession. Wherever nature places an impediment, she also implants a spark of genius to compensate for the handicap. Pregnancy is certainly the most complicated and probably has more pathological aspects than any of the natural phenomena. This is especially true if interpreted in terms of fetal and maternal morbidity and mortality.

Many lurid chapters have been written into this specialty. Perhaps the most dramatic is the history of obstetrical forceps. Men groped for some such aid for many years, and the forceps had crude precursors. It was not until the fifteenth century that we find the progenitors of the present strain. We are all familiar with the Chamberlens and their familial cunning and secretiveness. However their secret was not for long and womankind was blessed by a valuable addition and aid in obstetrics. As new complications were experienced and more knowledge gained the forceps have been altered and improved to better obtain the desired purpose.

One of the most discouraging of the commoner complications is the posterior occiput presentation. The actual picture of a patient exhausted by a long, ineffectual labor, disrupted household, and befagged doctor is all too clear to need any word picture.

Smellie and others realized the objection and difficulty of the classical forceps in such conditions. Exact application cannot be obtained with a forcep that has the usual pelvic curve to the blade. However it was not until 1908 that Christian Kielland, of Norway, introduced a forcep approaching satisfaction. This forcep varies from the usual forcep in the following particulars: They are of lighter construction. The shape is

different, being described as bayonet-shaped, and is straight, lacking the pelvic curve almost entirely. The blades have a sliding lock. And the technique of application is different. All these departures make possible the easy, constant bi-parietal application in a posterior occiput and transverse head presentation. This is not possible with the other types of forceps. The mode of application, as set down by Kielland follows:

The patient is placed in the usual lithotomy position. An absolutely correct determination of the level to which the head has descended and the direction of the fontanelles must be made. The forceps are articulated and held in front of the vulva in the position that they will assume when applied. The concave margins of the blades are held towards the leading point of the head (the occiput in this instance). As an aid there is a small button made on the handles to designate the concave side, this also helps in rotation of the blade as described later. The anterior is introduced first. It is held with the cephalic concave side upward, as it is introduced, with the left fore and middle fingers helping it, between the cervix and the child's head. The forcep is introduced very gently upward and forward. Little difficulty is experienced. As soon as the blade is far enough in, the shank should rest on the posterior vaginal wall. The next step is rotation of the blade, to bring the concave surface in relation to the parietal bones of the child's skull. Rotation should always be done in the direction of the side on which the concave margin of the blade points. The button indicates this side and rotation is made to the side on which the knob is found. When completed the blade will adjust itself so that it is not necessary to hold it, thus giving you a free hand. The second blade is introduced posteriorly. With the fore and middle fingers, again the left hand, the blade is gently pushed between the posterior lip of the cervix and the head. Sometimes slight difficulty is encountered, but by carrying the tip to one side of the promitory of the sacrum and by elevating or depressing the handle, the blade is carried to the desired level. Articulation of the handles is easy. The sliding lock allows the blades to be at varying levels. As soon as traction is made they adjust themselves. Force is unnecessary in the application and should never be used. When applied properly the blades are in the antero-posterior diameter. Traction is made in the direction in which the handles point. As the head descends there is a tendency toward spontaneous rotation. However if this should not occur or if rotation be desired before descent, it can easily be done by simply turning the handles through an arc of ninety degrees, thus changing the head from the transverse to the antero-posterior diameter of the pelvis. Traction should not be made while rotation is being performed. As the head descends there is a natural tendency for the operator to elevate the handles as with the other types of forceps. This is not necessary and may cause injury to the mother's soft parts or to the child if done. Traction should follow the direction of the handles throughout the operation. In left occiput posterior the procedure is the same, only the blades are reversed. Also in face presentation these forceps prove a boon, especially where the chin is posterior, when the old forceps are actually contra-indicated. By simply remembering that the concave margins should be directed toward the leading point of the presentation, the application will be easy.

The writer's experience with the Kielland forceps is limited to a series of about fifty cases at The Kensington Hospital for Women, in Philadelphia, in which he observed and participated, and to twenty private cases. Of the twenty patients one child was lost. The application was made in a private home after rapid dilatation was secured. The child's heart rate had dropped from 125 to 80 per minute. The cord was pulseless, and the heart action very feeble. The child never breathed, although the delivery was an easy one and accompanied by no maternal injury. Harriman, in a paper as yet unpublished, summarizes the seventy cases at the Kensington Hospital. Two babies died, thus giving a rate of 2.8%. One mother died of sepsis. He also brings out the important point of the danger of bladder injury, which several writers have experienced. Harriman noted three cases of vesico-vaginal fistula in his series occuring with three different operators of wide experience. With this possibility in mind and proper precautions followed there should not be many such injuries. Greenhill has contributed a most valuable summary. He covers in all some 1,762 cases reported by thirty-six authors and adds twelve cases of his own. We find many reports by both native and foreign doctors giving their personal experiences. We find both opponents and adherents, with the latter in the majority. All agree that the operator should be familiar with the instrument and careful in its use. Of the Germans—Kuster, Mayer, Hoffman, Rouz, Brach, etc., report with varying enthusiasm. Henker advocated their use for the practitioner, while Fink does not advise their general use. He reports 1,000 cases from the literature and fifty-four of his own. His own infant mortality was a bit over ten per cent. He thought the application of the anterior blade was dangerous, while Kuster was convinced that it was not. The opinion in this country is apparently about the same as the Continentals; here also we find more favorable reports than otherwise. Personally the forceps have been a most valuable aid. However, their facility of use should not make one forget the other admirable methods such as hysterotomy and version. These forceps will probably assume their rightful position as a definite adjunct to the men who are not ardent protagonists to any set and permanent method of meeting complications of this nature.

To summarize:

Requirements—Absolute knowledge of the station and position of the head. Cannot have too much disproportion. Dilatation of the cervix. Sacral promentory not too prominent. Complete understanding of the method of application of the forceps, preferably gained by association with some one who is experienced in their use, or practice on the mannikin.

Disadvantage—Probably causes more laceration than some other methods, though not as much as the axis-traction forceps or the Scanzoni maneuver in the hands of the ordinary operator.

Advantages—Only type of forcep that assures a bi-parietal application, in these presentations. Especially useful in flat pelves. Can be used for both traction and rotation.

Is not necessary to change forceps nor re-apply them.

DISCUSSION

Dr. F. N. Bowles, Durham: I would like to bring out a few points that the essayist has omitted with reference to the use of Kielland forceps and flat pelves. It is easier and has more exact application in the transverse position of the high pelvic arrest. It is against all my teaching about using forceps to elect to do forceps operation in these cases. We have forceps that we can make an easy application of. I think the use of forceps above the brim is a backward step. In regard to the injury to the maternal soft parts in the use of the Kielland forceps. I do not know whether there is any greater injury than in other types. I think the average general practitioner probably should not do much in the use of Kielland forceps for the simple reason he probably has not had much opportunity to get acquainted with it as has an obstetrical specialist. A couple of points in regard to the failure of the forceps, the general as well as Kielland forceps: the injury to the maternal soft parts. A very important point is the absolute knowledge of the station and position of the head on the part of the foetus, as Dr. Ross brought out.

Incomplete preparation of maternal soft parts—this is very important and when not carried out accounts for major part of maternal injuries. In the average general practitioner's hands the Kielland is a dangerous instrument.

Dr. Geo. W. Johnson, Wilmington: I first saw the Kielland forceps used in the Chicago Lying-In Hospital and since then have used them about a dozen times. Their application and use are not as simple as would be supposed. It is essential to have the exact diagnosis of position and for this the criterion is the ear.

I believe these forceps will have a definite place in obstetrics but they should be used with caution.

Dr. John Watkins, Asheville: I recognize in the Kielland forceps an excellent piece of obstetrical equipment. It was designed by a real obstetrician and it is being used in this country by too many capable and experienced men to entertain for a moment any serious thought of criticism. But in presenting its use before this body I feel that a word of warning or some conservative statement should go along with the general discussion, which Dr. Ross, because he is an experienced obstetrician and skilled in the use of the Kielland instrument has not emphasized sufficiently. In the first place, you must know how to use the Kielland forceps. I don't mean how to use forceps—but how to use the Kielland forceps. They are different. Next you must know your station and position. Know it exactly. And then I doubt if you can do any better work with it than with those forceps with which you have already had experience. Finally, taking conditions generally, we do not need more or differently designed forceps. Most of us don't. What we need is less use of forceps and more skilled application and use thereof when necessary.

SECTION ON PRACTICE OF MEDICINE

CHAIRMAN: DR. W. D. ROGERS, Warrenton.

SOME THOUGHTS ABOUT MENTAL DISEASES AS THEY AFFECT THE GENERAL PRACTITIONER

By WESLEY TAYLOR, Greensboro, N. C.

Sir Humphrey Rolleston, President of the Royal College of Physicians of London, in his address before the annual meeting of the British Medical Association held at Bath in 1925, spoke as follows: "It must be remembered that probably the bulk of patients in ordinary practice present some disorder, however slight, of mind, conduct, or feeling.*** Failure to deal efficiently and sympathetically with these minor disorders may well, as Dr. Lewellys Barker has pointed out, account for some of the vogue of Christian Science and other forms of irregular practice.*** The public, as well as ourselves, require education as to the way in which mental abnormalities should be regarded and should be impressed with the similarity of mental and bodily disorders.***"

Dejerine says that over one-half of all the patients who come to the physician are suffering from a nervous or mental affliction. Most persons who finally enter mental hospitals first appeal to their physician for mental disorders which are clothed in the garb of a physical ailment. For years I have heard it repeated that "There is a mental side even to a sore thumb." Sir W. F. Gairdner half a century ago said that "Disease is, for the most part, normal function acting under abnormal conditions."

Many patients come to us with physically sound organs whose function is upset by a faulty physical, social, or moral environment. Like physical disorders, which are, as a rule, benign and curable, most disturbances of the mind are harmless and responsive to treatment. We believe that if we could see all mental cases in their beginning a great many might be prevented. Retarded children who are illy adjusted, and therefore under excessive strain, furnish one of our most fruitful fields. While their efficiency cannot be increased, relief from their intolerable burden would prevent the development of much trouble at a later period. The family physician, to whom these patients first appeal, has the best opportunity to help them. The greater portion of cases coming to the specialist or to the mental hospital have passed the more hopeful period of their illness without treatment.

Patients usually stand aghast when anyone recommends a mental examination, or suggests that they may have a mental disorder. Many physicians, therefore, are tempted to pass over a complaint, recognizing clearly that it is probably due to faulty environment or a psychic insult, but not consciously accepting it as a mental affection, pure and simple.

There is no member of any community in this country who is more beloved than the family doctor, no one who is expected to know so many things; and certainly no one is called upon to exercise his talents in more

unusual and unexpected quarters. He must baptize the baby, draw up a will, testify in divorce court, pull teeth, give instruction in cooking, barber a sick man, run a household on occasions, bathe a lunatic, adjudicate family troubles or make the baby take castor oil. A doctor friend was even asked to say a few kind words at the bier of a departed patient.

A moment's reflection regarding our personal experiences will show us that a large part of our work is in the mental sphere. Most of us do the physical side of the work which comes to hand and exact pay for it, but the treatment of the mental aspect is dispensed as sympathetic interest out of the goodness of our hearts.

Let us glance at a few of the cases which come to us every day and see what mental aspects they present.

How many of the children who come to our office would measure up to normal if we should subject them to the Binet intelligence test? It is remarkable how many adult persons fail to come up to the intelligence level of eight years, which leaves them in the imbecile class, while those who fall below the twelve year old mental standard, and would therefore be classed among the morons, are a large factor in everyday life.

The medical officers who made intelligence tests among our soldiers during the World War were amazed at the enormous number of recruits who failed to come up to the so-called normal. Out of 1,700,000 soldiers who were mentally examined, ten per cent fell below a normal mental age of ten years. These, along with those who fell below the average for a normal child of twelve years—twenty per cent in all—belong to the moron group, according to our present standard of classification. It was almost impossible to believe that seventy per cent of drafted recruits *fell below* the standard which has been set for a normal fifteen-year-old boy or girl. Only sixteen and one-half per cent passed an examination better than fifteen years. Of all the soldiers examined only four and one-half per cent reached what is regarded as the standard for nineteen years. These statistics are from the War Department reports.

Children who fail to pass in their school grades, or who become nervous or irritable and who play truant, will usually be found to be retarded (which in many cases is but a polite term for feeblemindedness).

The explanation for this is simple. With a few exceptions the child has been asked to do something which is beyond its mental grasp. The load is too heavy. It finds no interest in the work, which has become distasteful. The only relief it knows is to run away. If it were competent it would be interested, and once interested there would be no such impulse. The counterpart of this is the adult who, instead of running away from school, runs away from, or changes his job constantly. It is almost a pathognomonic sign of low intelligence.

The child who prefers to play with younger children usually does so because they more nearly approximate his own mental age. Others, out of the ordinary, day dreamers or ones especially sensitive to criticism and those who are shy and are not good mixers, will frequently be found to be retarded. This question of social adaptation is important. Primitive man's relationships with his neighbors were simple. Society today is very complex and our personal adjustments require a much higher

degree of intelligence. So true is this that when we see a child shun playmates, refuse to mix with others and play by himself we expect him to be retarded. Some children get around this by playing with younger children, which automatically places them. If compelled to associate with their contemporaries they are usually remarked as being quarrelsome, irritable and hard to get on with. The ability of a child to adjust itself readily and well to its social and other surroundings is a fairly good indication that it is normal, or up to the standard of its environment. Bed wetting, continued beyond the normal period, and especially if it be carried well into childhood, is usually associated with a neuropathic disposition. In the absence of real neuropathic manifestations one may well suspect mental retardation. A Binet test on such cases will not infrequently furnish surprising information.

One must not, however, get the idea that the Binet intelligence test is anything more than a good tool. It is just like any other instrument, as for example a microscope; we must have experience with it and use it with judgment.

Senility presents a condition somewhat analogous to childhood. The deterioration of age has always been called second childhood. We are too charitable and too familiar with the condition to even think of it as imbecility. Nevertheless, we patronize old people and treat them just as we do children in proportion to the mental forces which they retain. It never occurs to anyone to patronize an old person of high intelligence or a child of keen perceptions more than once. Going a step further, one can frequently make a good relative estimate of such a one's intelligence by the manner in which he is treated by his family and intimates.

We all have to do with alcoholism in spite of prohibition. It seems a reflection on our intelligence to more than call attention to it. One interesting feature about alcoholic excess is that one's intoxication is not so much due to what one drinks as that it depends on what one is. Quoting Dr. N. D. C. Lewis, Federal Institute for the Insane: "The type of behavior released by the use of alcohol depends on the fundamental constitution of the person consuming it." It removes our inhibition, takes off our clothing, as it were—revealing us in our true nakedness, that one may judge what sort of a mental, moral or intellectual creature we really are. The deterioration from alcohol contributes several common mental troubles, not only directly but in following generations as well. We must remember the possibilities of mental disorder in every alcoholic. Untoward symptoms are especially disturbances of memory, attention and orientation—confusion, hallucinations and confabulations associated with frightful dreams and depression. Alcohol and other habit-forming drugs are rarely held as fundamentally causative in nervous and mental disturbances. When present they are usually sequelae. In a neurotic constitution alcohol kindles disorders which we all attribute to drink. It likely started because of lowered intellectual tension. An inferior mentality is nevertheless frequently associated with dipsomania.

Immorality, petty thieving and criminal tendencies, extreme poverty and explosions of temper are most common among retarded individuals.

We are all familiar with the melancholic. It is well to bear in mind the possibility of suicide in these cases. The hypochondriac who attrib-

utes all his bad feelings to his stomach, or some other equally inoffensive organ, is harmless—unless it is to himself. So much cannot be said of the man who comes in blaming some person or some force *outside of himself* for his troubles. He belongs to the class who kills his family or his neighbor. The man with delusions of persecution may belong in any one of several forms of insanity. He may be alcoholic, parasyphilitic, dementia praecox, or he may be a pure paranoiac—free from any other discoverable trouble save his blind, unreasonable and insane obsession that some one, some organization, or some secret order is following him—causing him repeatedly to lose his job, poisoning people's minds against him, and annoying and persecuting him. Persons who are apparently sound in every other respect will tell you the most absurd stories of persecutions—often so utterly improbable that a four year old child would not believe them.

The great prevalence of syphilis, especially since the war, has already led to a noticeable increase in the post-luetic forms of insanity. There is considerable difference of opinion as to how much infection there really is in this country, but evidence shows not far from twelve per cent of the adult population to have been infected. The statistics are interesting, if not entirely acceptable. Vedder found among the applicants for military service in early war days that from twelve and one-half to sixteen per cent plus of the white recruits presented a positive Wassermann, while thirty-six per cent of colored applicants gave positive reactions. This is a fair average statistical presentation. Out of 3,000 Wassermanns made by the North Carolina State Board of Health on Negroes in 1916, McNeil reported that twenty per cent were positive. Janeway reported thirteen per cent positive reactions in 1,272 white cases and forty-five per cent positive in 288 Negroes taken from the Baltimore Internal Medical Clinics the same year. Fox found three times as many positive reactions among the colored patients in the Johns Hopkins Hospital Children's Clinic as among the white patients, and Williams reports that in the Johns Hopkins Woman's Clinic 12.3% of white women reacted positively as compared with 34.9% of colored women patients. It is said that nervous syphilis has increased relatively very much since the introduction of the salvarsan treatment. This may be due to its hindering the formation of protective antibodies, while the central nervous system remains out of reach of the salvarsan. The ravages of syphilis are most frequently seen as paresis, locomotor ataxia, cerebral syphilis and in many cases of paralysis. The mental aspect of practically every case of hemiplegia is evident. Deliria, especially with acute fevers and toxic disorders, are common—they need no further mention.

The drug psychoses seem to be more common since prohibition. The addictions to chloral, bromide, aspirin, and several other anodynes have increased and add to the number of mental disorders.

Our last group—epilepsy—is common. Every case presents a mental side. Slowed speech and dull mentality are characteristic, when present. Epileptics are sensitive and cleverly conceal their defects. Deterioration is almost universal in advanced cases.

It is from people of neurotic constitution that most of our insane patients are recruited—in fact, "a large number of those who become

unbalanced are individuals in whom a turn to the worse could be anticipated."

The man who falls a victim of any mental disorder usually presents certain traits during his supposedly normal pre-insane period suggestive of the particular psychosis which he later develops. In other words, the neurotic presents a character complex paralleling the psychosis he would assume if sufficiently pressed. As Kraepelin says, "It is probable that the mental constitution of the neurasthenic, the hysteric, the paranoiac and the manic-depressive is different from the very start." We speak loosely of nervousness, the neurotic, the neurotic constitution, etc. Dr. Adolf Meyer has clarified this situation wonderfully in his "Analysis of the Neurotic Constitution." Conforming to his ideas, we first eliminate everything in the make-up which may have been due directly to habit and environment—such as the effects of alcohol, defective nutrition. trauma, overwork, etc. Any considerable composite of irregularities of temperament and of action which remains is considered as constituting the "neurotic constitution." Many of these irregularities of behavior are only extremes of normal characteristics—or distortions of traits not considered abnormal.

As we look on the alcoholic's past we usually find he was an easy-going, inconsistent person, subject to extremes of emotion, frequently dependent on and easily influenced by others.

The man who develops neurasthenia (excepting that consequent to exhaustion and infectious diseases) showed irritability at trifles, ready exhaustibility and exaltation in childhood. Head pressure and a seclusive disposition belong to the picture.

Psychasthenics were born with temperament. As children they were characterized by indecision, hesitancy, meekness, timidity, and idealism. They shirked responsibility and were easily led, or misled, by others. New situations and emotional shocks always upset them.

When hypochondria develops, it is in persons who have shown some of the preceding symptoms in youth, especially if they are subject to introspection and self-observation. Such children enjoy numerous trifling physical disorders.

Hysteria develops easily in women who have always shown a constitution characterized by a craving for attention and sympathy. They were scary, nervous and easily alarmed; sensitive and easily depressed. There is a distortion to their emotional responses and they lack emotional balance. Upon this basis crises of emotional weakness and loss of control readily develop.

Children inclined to be sulky, who are subject to unwarranted outbursts of temper and irritability, have the epileptic diathesis.

Persons who are constitutionally depressed, as contrasted with the excitement in neurasthenics, who show an inferiority complex and feelings of insufficiency, though with occasional periods of elation, are potential manic-depressives. They are also potential suicides.

When we meet suspicious people, who see "meanings" to things and are concerned with what others think; who are inclined to seclusion and who, without judgment, ascribe sinister intentions to the most innocent actions of others, we can easily imagine them drifting into paranoia.

Certain peculiarities commonly seen in the dispositions of children who later develop dementia praecox are worth noting. Many of these children are really good, though inclined to be sensitive and shy and therefore retiring, even to unsociability. Some show tendencies to day-dreaming and self-absorption, which may go so far as to cause marked insufficiency in their work. Lack of ambition, initiative and directive ability is common. Altruism and overconscientiousness, with a liking for religious forms, is not uncommonly associated with intolerance, jealousy and emotionality. Violent outbursts of temper, with complete loss of self-control, are to be expected. They are particularly subject to moods, are full of unaccountable whims and impulses, and show poor judgment even in commonplace circumstances.

These traits merely form the foundation for a deterioration, characterized by a progressive indifference in the emotional life which ends ordinarily in dementia.

Poor habits of sleep, somnambulism, fearful dreams, emotionalism, idiosyncrasies, irritability and distractibility indicate the development of an abnormal constitution, especially at that formative period—puberty and adolescence—this is the parting of the ways for many.

Other pernicious elements enter when impressionable children are permitted to undergo strong or continuous emotional excitement, whether it be a funeral or a movie or the strain of modern civilized life itself. With the strain and tension of school and its attendant examinations and numerous emotional features the load increases. Another aggravating factor, not discouraged by present-day social customs, is the precocious and abnormal sexual practices of most sophisticated children. Truly the resistance of our children is wonderful. Emotional manifestations in children and in young people coming without evident reason will usually be found to have a sexual foundation.

Freud declares that most psychic troubles originate in the sexual field. The idea—(I do not mean Freud's doctrine however) scorned for years—is gaining ground. Adolf Meyer believes "a metabolic disturbance of the sexual functions" lies at the bottom of many mental irregularities. The family doctor is usually in position to help at the onset of sexual irregularity and domestic maladjustment, if help is possible. He should keep in mind the importance of the sexual role.

DISCUSSION

Dr. F. R. Taylor, High Point: I am very much interested in Dr. Taylor's paper. He furnished me with a copy of it, and it bears evidence of careful study. I wish to bring out just one or two points in my discussion. For instance, there is a mental side even to a sore thumb. I think the principle is brought out to a very high degree in the field of gastro-enterology. I do not know anyone who has brought it out more adequately than Dr. Alvarez, formerly of California, who is now with the Mayo Clinic. Alvarez says in examining a patient with so-called digestive disturbance one of the most important things to take into account is the patient's mental condition. Careful inspection will sometimes reveal, for example, that a married woman is not wearing her wedding

ring. Attention to that detail, as to whether it is an accidental happening or whether there is a real tragedy in her life, will sometimes reveal the cause of the disturbance. He brings out that family fights should not be held at the table, because they interfere with digestion. Dr. Cannon has brought out the effects of fear, rage, etc., on the digestive function. I think we must remember that no patient that comes to us is merely a gastro-intestinal tract or a circulatory system or something like that, but he is a human being with all sorts of complexes which have a tremendous bearing on derangement of function. As to the great prevalence of mental disturbances, I think that can not possibly be overstressed. I think all of us have them. Insanity, as I conceive it, is not a medical term at all; it is a legal term. I wish we could get away from it in the practice of medicine. Mental disease is a thing with which all of us come in contact practically every day of our lives. There is no reason why a person should not go to a hospital properly equipped to handle it and be treated for a curable, transitory mental condition, without stigma and without any deprivation of rights, if he is not insane, than for appendicitis. That is one thing we need to teach people. Mental disturbances are very common. Man has a more complicated brain than any other animal, and he sometimes works his brain harder than any other organ of his body. Why should he not have disturbances of his brain as well as of his stomach?

As to the Binet intelligence tests, as Dr. Taylor says, they are merely a useful tool. It seems to me one of the great defects in them is that so much is based on the time reaction, on the speed. I know a boy at home, a neighbor child, whom my boy was very much upset about. He was given some intelligence tests and was put out of his grade at school. He had been getting right along in school, but it took him longer to get there. It seems to me, though, that the man who has the character to stick at it is not mentally deficient.

As to this thing of running away from one job to another, I think that is sometimes not indicative of lower mental power but of erratic geniuses. I wish Dr. Taylor would speak of that in closing.

As to the tendency to keep to oneself, perhaps that may be a sign of inferiority, but some great men have also had it. Pasteur, I am told, kept to himself.

In regard to bed-wetting, we must remember that there is not only a neurological condition to be considered, but also the bladder. Some cases are due to an unusually small bladder.

As to the problem of alcoholism, not only is what one drinks important but also why one drinks. In a wonderful little book published by the Cambridge University Press entitled "The Psychology of Insanity," Bernard Hart brings out that alcoholism is usually regarded as a disease by the medical profession and as a vice by the clerical profession, but really it is an attempt to escape from some intolerable situation and should be classified accordingly. It is a means of escape temporarily, but a very dangerous one.

As to the part syphilis plays, my practice is too small in that line for me to have any valid opinion, but I was interested in some statistics

of the Crowell Clinic which seem to bear out the idea that syphilis is decreasing.

There is one more point I should like to mention in closing, and that is this. The environment in childhood is of tremendous importance. An investigation was carried out by the Boston Psychopathic Hospital a few years ago in which the homes were investigated, and in a shockingly large proportion of cases it was found that there was no discipline in the home, no background, nothing to teach the child self-control; and when the child got out in the conflicts of life he broke under the strain, because he had never been taught to meet the minor crises of childhood.

Dr. G. H. Macon, Warrenton: Up to this year it was hard to get anyone to write a paper on this important subject of nervous and mental diseases; we knew nothing about the subject and did not try to find out anything about it. We have four papers on it at this meeting, whereas there used to be about one, but most often no papers at all.

We have with us today Dr. L. G. Beall, who read a splendid paper yesterday, a wonderful paper. I am sure we shall all be glad to hear from him, because he has made this his life study and really knows from actual experience and observation what he is talking about, and, too, his talks or discussions are always so very practical and to the point.

Dr. L. G. Beall, Black Mountain: I think the thing that stands out in a paper of this kind is the necessity of a paper for general practitioners along mental and nervous lines. The study of scientific medicine has grown to that point where we are coming somewhat into the danger of studying pathological conditions per se and not patients afflicted with the pathological conditions. We are seeing the need of the general practitioner who perhaps did not know as much of bacteriology as we do but who did know his patient. He studied his man, who incidentally had pneumonia or had appendicitis or some other physical ailment. The point that Dr. F. R. Taylor mentioned, in that every disease has a mental side, can not be too much emphasized.

I shall not discuss the points as the essayist brought them out and repeat what has been said, because he has so thoroughly and so well covered the subject; and Dr. F. R. Taylor has taken up a resume of it and covered that well. There is one thing which could be emphasized, which I am very glad to see that Dr. Taylor did emphasize, and that is that psychologic tendencies can be corrected only as those tendencies appear, and those tendencies appear at a very early age. So if we wish to prevent mental disorders or mental breakdown we should take special notice of these tendencies in the tender years.

Another point which can be emphasized is that whether or not these tendencies toward a breakdown ever become active depends largely upon the environment. There is one institution in the state which takes care of orphans from every walk of life. They question not where that orphan comes from, provided it needs help. I was recently talking to a representative of that institution, and he gave me some astounding facts. I have only my memory to depend upon, and I may get the figures slightly incorrect. He said out of 2,200 boys only thirty of them had come in conflict with the law and that out of 3,700 girls only twenty-three of them

had been delinquent. Now we know that those children were collected from homes in which there was the direst poverty and that there was some reason for early death in the family, that the father or mother probably had some serious illness. Yet these children, who were taken at a very tender age, six months old and up, and brought under the influence of a Christian home and proper training, carried that out to the end of the time that the institution had them under its care and beyond that so far as this man was able to trace them. I think that is a very significant fact, showing the great effect in life of the early environment of children.

Dr. Wesley Taylor, closing the discussion: The material for this paper was collected from notes taken in my clinical work during quite a number of months, and was cut materially to get it within the twenty minute limit. There were many other things I might have mentioned; for instance, the spoiled child reaction, but time would not permit.

Dr. Frederick Taylor's remark about the Binet test having the disadvantage of a time limit in it, is very certainly true. As I remarked about the Binet test, it is only a tool, and it is a tool that can be very easily misused. I think more intelligent attention is required of the man who makes a Binet test than is always given. That man must observe whether he has to do with a slow child—a child that does not answer quickly because he does not want to or is not in the habit of it. I believe it frequently puts the examiner's intelligence to test, since it is so often up to him to determine how these time tests should be applied.

Dr. Frederick Taylor mentioned that certain distinguished people are and have always been slow. The best illustration of such a case that I recall is that of Charcot, the great French neurologist. Charcot was so slow in his work that he never passed an examination in his entire medical course. If his teachers had not been intelligent enough to observe that he was slow, but very intelligent and that he required plenty of time, the name of Charcot would never have been known to the world. They let him pass without any examinations whatever; he was not even asked to take examinations after his first year.

Dr. Taylor inquired also about the erratic geniuses of the world. That has interested me and I have been studying the subject for some years. If I am permitted, I should like to present a paper on it at some future date. I recall several now, who come under this heading. The first is Beethoven. His memory was so poor that he would rent a room in the morning and by night would have forgotten where it was, and would have to rent another. At one time he was paying for five lodgings. Another was Disraeli, the great Disraeli,—a very eccentric man. At times he did not know who he was. He mentions in his autobiography that he was frequently compelled to shout aloud in his room to convince himself he was alive, and get down books from his library to find out his name.

We all know about Samuel Johnson. Boswell has certainly painted him well in his biography, and has shown how peculiar he was.

The two Pitts, father and son, were at times so incompetent that they could not read their own mail or meet any members of their family, and had to be left alone in their rooms.

One more case. I knew a man who was a mathematical genius. He made his living by appearing in vaudeville. You might ask him any question on a mathematical subject and he would give the correct answer immediately. He was so incompetent in other directions, however, that he had to have an attendant to see that he went to bed, got up, kept his appointments, and was at the theatre on time, etc. That man could not transact any business, however simple, if left to himself.

Some of our great geniuses seem to have been almost feeble-minded, and some seem even to have had a streak of insanity in their makeup. One might say that there is only a certain amount of material which goes into the makeup of every man, so if you make him very broad in any particular direction he will of necessity be narrow, or limited, in some other ways.

THE PLACE OF THE YEASTS IN MEDICINE

By Edward J. Wood, M.D., D.T.M. (Eng.), Wilmington, N. C.

The present work only includes a small division of that group of fungi commonly known as the yeasts. Every effort has been put forth to obtain a reasonable basis of classification of the pathogenic yeasts but the number is legion creating a really distressing state of things to the student of mycology. There are important organisms known by so many names that one hesitates to make mention of the species in question for fear of being ridiculous. As an example the organism regarded usually as the cause of thrush will be found under three names each of which is regarded by a group of eminent scientists as being botanically correct. The organism regarded by Ashford as the cause of sprue is known by him as the Monilia psilosis and by H. W. Anderson as the Parasaccharomyces ashfordii. Out of the chaos it is hoped that soon will come order but until that time scientific progress must be seriously retarded.

The time is near when an obscure infectious condition regarded only from the bacteriological standpoint will be regarded as only partially and imperfectly studied unless, of course, before exhausting bacteriological means the explanation is found. Many hitherto unexplained conditions having the indelible stamp of an infectious process have now the prospect of early solution. Some baffling infections attributed to known bacterial agent and yet offering many difficult problems especially in physiotherapeutics seems destined to a solution through the recognition of an hitherto neglected group of secondary invaders capable of distorting the picture completely and determining the outcome much more surely than the prime invader, indeed the question of which of two or more distinct agencies are responsible for the pathological processes causing the symptoms becomes a problem not capable of solution in the present state of our knowledge. This is preeminently the case in the bronchial and pulmonary processes of chronic kind which are nontuberculous. In more than one instance the section of old tissues of a decade ago revised in

the light of recent knowledge are readily understood and a good example is a blastomycetic lesion cited by Montgomery and Ormsby in which the diagnosis was made histologically ten years later.

Medical mycology ten years hence will likely find an important place in the medical curriculum second only to bacteriology in importance but doubtless destined to cause changes and revisions in many fields of medicine. Valuable isolated data have been accumulating for two decades and more and but for the lack of a systematic scheme and a uniform nomenclature this branch would long ago have come into its own. In the literature of the past twenty years I have been able to find instances of the following: oral sepsis attributed to a large and varying number of yeasts usually monilia-like; tonsillar infections with and without membrane-like deposits including the monilia albicans as well as many other budding yeasts; blastomycosis of the brain and meninges with yeasts found in the cerebro-spinal fluid and blastomycotic deposits in the cerebral substance demonstrated at autopsy; blastomycosis of the lung in cattle associated with tuberculosis (Sanfelice); blastomycosis of the larynx, and the record of a diagnosis of tuberculous laryngitis later proven to be blastomycotic with the source in the tonsils; blastomycosis of the tongue; blastomycotic bronchopneumonia; lesion of the heart musculature in systemtic blastomycosis; blastomycosis of the eyelids and further involvement of the cornea; blastomycetes found in conjunctivitis simulating trachoma; scores of examples of chronic bronchitis, bronchiectasis, bronchial asthma and pulmonary abscess attributed to various blastomycetes chief among which is the great genus Monilia justifying the synonym, broncho-moniliasis.

As we usually think of it blastomycosis conveys the picture of a chronic skin process to most of us. Contrary to our usual conception of it the cause is now attributed to a number of organisms falling into widely separate positions botanically. Castellani includes the genera: Saccharomyces, Cryptococcus, Coccidiosis and Monilia. Ricketts distinguished four types: blastomycetoid or yeast-like; cryptococcus-like reproducing by endosporulation; endomyces-like with submerged mycelia and rare budding; hypomycetoid type with aerial hyphae and submerged mycelia.

Very briefly a word of history is in order especially as the subject is so recent and yet with a literature now so vast. Wernicke in 1890 in Buenos Ayres described two cases of a papillomatous skin lesion which he regarded as protozoal but later Gilchrist and Ophuls showed that the etiological agent was really vegetable and in 1894 a yeast-like organism from a scrofula-like lesion was found by Gilchrist. Also in 1894 Busse and Buschke described a condition regarded as a pyemia due to a cryptococcus. Since then the names of the American observers Ricketts, Ormsby, Hyde, Montgomery and Pusey as well as the Frenchman, M. Langeron, the Roman (Sanfelice) and Castellani, the Italian-English-American have been intimately connected with the development of our knowledge of this branch.

M. Langeron of Paris, probably the world's greatest mycologist, says that the multiplicity of etiological agents of blastomycotic dermatitis forbids any classification but at this time he feels that two great divisions

can be made: the one due to the Mycoderma dermatitis, a yeast producing buds in the lesions and in the cultures; the other, a much graver process with a tendency to become generalized, due to the Mycoderma immitis, a yeast never producing buds. The first is called by the French the disease of Gilchrist and Stokes or the disease of Chicago. This milder process usually affects the skin of the face and extremities. It is not unknown in North Carolina and a number of cases have been carefully studied in this state.

As intimated the mucous membrane of the mouth and the pharynx and especially of the tonsillar region have been found to harbor yeasts many of which are to be regarded as pathogenic. But probably more important even than these sources are the pyorrhoeal pus pockets. My own work on the yeasts of the bronchial and intestinal tracts have led me to consider this as probably the most important source except in childhood.

Chiefly from the above-mentioned sources Castellani has described and named forty species of the genus Monilia. Doubtless some of these species are known by other names in other countries and other works and this is just another illustration of reduplication and confusion. Of these forty species of Castellani five are found in common thrush and allied conditions, nine in the sputum in bronchomycosis, three in chronic bronchitis, six in the vaginal secretion in the tropics and in Europe and five species associated with sprue. Of the five species associated in sprue Castellani claims that Ashford's Monilia psilosis is included and that Ashford really in his account of his yeast is not describing one but several species. All of this is merely included here to give a fair statement of the existing confusion even among the most finished mycologists.

Langeron of Paris commenting on Castellani's well known work of the Monilia has the following to say: "The question of Monilia is one of the most difficult of medical mycology. The analytical school represented especially by Castellani has multiplied to such a degree the number of species that their determination has become well nigh impossible. The morphology is utterly useless in distinguishing them; also it is necessary to resort to biochemical reactions, that is to say the specific action exercises on milk, gelatin, blood serum and various sugars which are already employed in the study of the intestinal bacteria. One compares the species from the point of view of the liquefaction of solid media and the production of acid and gas in liquid media. Inversely one attempts to determine the sugars by the specific action of certain Monilia: the method which Castellani calls the conjugate or parallel. It is certain that if these reactions were constant the identification of the species would present no other difficulty than the necessity of making for each of them a great number of cultures on the various media. Unfortunately in practice this is not so: the reactions are proven to be constant for certain sugars and variable for others; the fermentative power may exist for the first cultures and disappear very fast; inversely a Monilia may not show such fermentative action but be able to acquire it little by little. The results may differ entirely depending on whether the culture is old or new. Castellani himself confessed the uncertainty of the method. What must one think then of those forty species described by this author and based on

variations which are quite uncertain and inconstant in the fermentation responses? There was no opportunity to make comparisons with the cultures of the author because a fire destroyed the greater part of his type cultures of which Monilia balcanica giving a specific reaction for glucose was one. It is impossible for us to enumerate and describe the species of Castellani here in detail. On the whole there seems little of note for not only is the identification of the organisms difficult but the pathologic roles are often doubtful and the experience of F. Potter that the Monilia albicans is not inoffensive is not universal."

This French estimate of Castellani's contribution to the study of the yeasts is by no means universal. The world's literature is teeming today with instances of the finding of the various organisms of his naming which are shown to play important parts in many disease conditions. Five years of study of species of Monilia has shown me that here in North Carolina we are encountering the vast majority of Castellani's forty species though it must be admitted that at times an organism is found which will not fit in with his description on account of the biochemical reactions. Were the attitude of Castellani assumed doubtless we might add many new species—sufficient to name one for each ambitious politician in North Carolina—but such a course seems confusion worse confounded. The conclusion of the whole matter is a presumption to suggest that in many instances the mycologists in describing these organisms and attributing their biochemical qualities to them have passed over a most important factor. Yeasts when grown on the usual acid Sabouraud's sugar agar have attached tenaciously to their outer walls myriads of bacteria and it matters not how exact the technique of fishing the colony of the yeast may be the bacteria remain to be reckoned with in the subsequent work. Yeasts are not the only organisms capable of fermenting sugars. Many bacteria, as is well recognized especially of the flora of the intestinal tract, also possess this property. As long as the yeast is grown on the usual acid media the bacteria need not be reckoned with for, while still alive, there will be no growth on account of the unsuitability of the conditions. However, when the various sugar tubes are finally inoculated with cultures from Sabouraud's medium the bacteria finding conditions again suitable for growth and development it is only reasonable to expect confusing results. As I have mentioned at a former session of this section any exact results with the yeasts must be made with pure cultures—pure not only in being of one species of yeast only but also pure in a bacteriological sense. When the yeast is pure mycologically and bacteriologically I have found with a large number of different species that the cultural and biochemical responses will be wonderfully uniform and constant. Cultures kept in the fermentation tubes with a large number of the test sugars (usually twelve or thirteen including insulin) will remain for weeks and even months without any variation from the characteristic fermentation changes which are always attained well within five days. My custom is to read and record the fermentation responses at the end of five days and it is rare indeed that at the end of five weeks or even much longer there would occur any deviation. Doubtless this pure culture may be secured by different observers in many different ways. For example one observer to obtain bacterial

purity inoculated the yeast in peptone sugar water with a H-ion concentration made up by hydrochloric acid to the point pH^2. In my own hands this would never be sufficient, for I am using Sabouraud dextrose agar with a pH 5.64 reaction, a wort agar with a pH 5.5 reaction and a special nutrient broth with a cresco purple addition to which the various test sugars are added adjusted to the point pH 5.1 and yet my cultures were not thus made bacteria-free. After many trials I found that every culture must first be inoculated intravenously in the rabbit before any dependable conclusions of an identifying kind could be reached. After several subcultures of the yeast from Sabouraud's medium are made on Sabouraud's medium each time thereby inhibiting the bacterial growth and with each subculture decreasing the number of bacteria, the animal inoculation is done. A series of several hundred rabbit inoculations have thus been made and it is now justifiable to conclude that if the yeast so inoculated is a nonpathogen the rabbit will not be affected. This is regardless of the size of the dose provided the technique has been exact. On the other hand if the yeast is a pathogen the inoculated rabbit will die after from one to five days. Not only has the question of the pathogenicity been thus definitely determined but the culture obtained from the animal's viscera with the usual bacteriological technique is obtained perfectly pure. With such a culture fixed results may be confidently expected. Were such a method adopted by mycologists generally it is reasonable to hope that some at least of the classification confusion could be eliminated. For medical purposes it would appear that one would be justified in making a beginning in the division of the yeasts into two great classes: pathogens and nonpathogens. I am not unaware of the crticism that in such a procedure the animal may die of a bacterial septicemia. The reply to this is that in this series of experiments with this technique the animal has not died in this way. To be protected from the possibility of such a source of error the autopsy of the rabbit must reveal the characteristic granulomatous-like lesions of the viscera which most frequently are found in the kidney. Bacterial cultures should be made of the heart's blood and all organs at the same time but even in negative bacterial findings a mycotic death was never accepted in the absence of the characteristic pathological change.

The necessity of animal inoculation in the study of any yeast cannot be too strongly stressed. It was found in numerous instances that a yeast might give biochemical returns differing in no way from a virulent pathogen and yet be entirely harmless to the rabbit. It is interesting to record that many rabbits were inoculated with unknown yeasts and though the procedure was repeated many times the animal was unharmed. This is further evidence of the fact above mentioned that a harmless yeast even though derived from feces can be inoculated in a rabbit with no untoward results from the contaminating bacteria. On this one principle hinges any value this investigation may possess.

I shall make no attempt to repeat before this Society my findings in sprue and pernicious anemia reported last year and the year before. Suffice it to say that evidence is not yet forthcoming to shake me in the belief of the close relationship of these two conditions but, on the other hand, cases are added to the list tending to strengthen this conception.

Mycologists generally have not accepted Ashford's Monilia psilosis as the single and certain cause of sprue but the number of observers accepting his view in this matter increases year by year. I would remind you of the finding in my laboratory of two years ago that the source of Ashford's yeast could be readily found in the pyorrhoeal pus. Ashford had suspected that the imperfectly baked Porto Rican bread offered a source. This seems improbable in the light of the far greater incidence of sprue in adults than in young children. My study pointed out that Ashfords' yeast occurred even more uniformly in the feces, the gastric contents and the mouth in pernicious anemia than in sprue. Many workers have been occupied in an effort to determine the presence or absence of a complement fixation in pernicious and in sprue using a specific yeast as antigen. Michel in Porto Rico obtained some success in this way. More recently in an unreported work Arthur Ellis in London duplicated the results of Michel but was not content with the observation because of a lack of sharpness in the response. My own inquiries satisfy me that there is some unknown element present which interferes in such a way that nothing may be expected of it in the study of any yeast infection. On the other hand workers in the Rockefeller Institute have made progress in the study of a precipitin reaction in rabbits which offers hope of specific response. Adrian Stokes of Guy's Hospital is now reproducing their production of what they call "yeast gum" in an effort to obtain a substance of a specific sort which will be suitable for such work. To my mind the evidence presented suggests that there is much ground for optimism along this line. A number of cases of advanced pernicious anemia treated with an autogenous vaccine of the Monilia psilosis have done amazingly well and have gone from one to two years without the need of transfusion. The cases which received this vaccine treatment were selected without care and included many with advanced cord changes. Naturally the result in such instances has been bad and the pessimist can readily condemn the whole procedure from the clinical evidence. The fact remains that early cases or cases presenting no sensory changes have in numerous instances shown marked improvement. This treatment will be continued but in so doing the patients will not be deprived the splendid advance made by Minot and his associates in the feeding of liver. It is interesting in this connection to recall that liver soup has been used in the East for many years in the treatment of sprue.

After obtaining a yeast culture from the sputum or the feces or the gastric contents or the mouth the great difficulty of deciding whether or not, even though it be proven to be a pathogen, it played a part in the production of the disease process under consideration is a very great one and one which lacks much of a final solution. Possibly a specific reaction as is hoped for in the precipitin test may prove a step forward.

The literature of the bronchomycoses is most voluminous and the relation of the yeasts to the production of respiratory lesions has been the cause of controversy extending through many years. Langeron is disposed to regard the contribution of A. Pijper in South Africa as the most authoritative. This observer believes that this form of bronchitis is never a clinical nor a pathological entity chiefly because species of Monilia may be found in immense numbers in almost any sputum. And

yet Pijper has inoculated rabbits intratracheally and produced definite pulmonary lesions added to profound emaciation with a notable disappearance of all fat. In fairness Langeron again cites a case of Poiron in which the Saccharonyces etiennei is suspected. The organism was found in the sputum of a patient with a pleural effusion and advanced foci of bronchopneumonia. The condition of the patient was very desperate but treatment with iodine (4 grams a day) brought about a veritable resurrection. He regarded as a life saver the microscopic examination which failed to demonstrate acid fast bacilli but yeasts following an angina illustrating the importance of bucco-pharyngeal and tonsillar sources.

O. de Magalhaes recovered the Monilia braziliensis from the sputum of a patient presenting the classical picture of tuberculosis but was unable to find the tubercle bacillus. This yeast was very virulent and experimentally always produced pulmonary lesions. Iodine treatment begun in time is said to cure it. This observer studied a series of fourteen cases with six deaths and five autopsies. The lesion was found to resemble tuberculosis very closely. It is suggested that it has been confused with pulmonary syphilis and it seems not improbable that in the past the therapeutic test which indicated syphilis really was misleading and that the iodides cured the yeast infection.

There is much lacking in the description of the pathology of moniliasis. Mendelson has found at autopsy that the condition closely resembles tubercle. The suspected tubercles are really mycotic tumors. These tiny bodies stand out prominently and one can readily detect them in the dark by the sense of touch. Mendelson says that while the blood supply is completely shut off from the filbert-like growths yet there seems to be no necrosis and it is thought that the surrounding tissues supply nourishment indirectly. He expresses the belief that the condition may be more common in the United States than is generally supposed. In my own experience abscess formation has occupied an important part pathologically.

In 1924 I saw a lad of sixteen years, height six feet, weight 119 pounds. The complaint was chills, fever, cough. He was emaciated and obviously phthisical. At the time the temperature was very irregular, frequently ranging from 102 to 104 and the pulse rate was 119. The physical signs were numerous and varied rather like the influenzal bronchopneumonia pictures. The roentgenogram showed clear apices, heavy bronchial markings and an abscess about the size of a walnut close to the right hilus. The sputum was repeatedly negative for tubercle bacilli. Cultures of the sputum on Sabouraud's medium gave numerous colonies of a yeast. This yeast inoculated in a rabbit intravenously killed in the first instance in twenty-four hours and in the next in thirty hours. There was a notable change in the rabbit's lung: red, wet, partly solidified, strongly reminding one of the influenzal lungs. The patient made a very satisfactory recovery.

In a case studied through the courtesy of Dr. McCain a Monilia was found in the sputum which was classified as M. guilliermondi (Castellani). In this or another similar case it was possible to study the tissue histologically and it was found to conform closely to the description of

Mendelson. In both of Dr. McCain's cases repeated sputum examinations were negative.

A gentleman of seventy years complaining of dyspnoea so violent that even talking was impossible, inability to walk or to take any form of exercise. His cough was of the intermittent kind and the most distressing I ever heard. There was an extreme bronchorrhoea. Many examinations failed to reveal tubercle bacilli. The blood pressure was always low. There was no cause for the dyspnoea to be found in the cardio-vascular-renal system. The chest signs were quite variable. At one time the breath sounds at the apices were notably harsh with prolonged expiration. At another coarse rales in inspiration were heard over the left mid-back with faint expiratory sound. At one point in the back the breathing approached the tubular quality. Breath sounds at both bases were so faint and indistinct that fluid was suspected, but not sustained by percussion or the roentgenogram. The latter showed numerous bronchiectatic rings and evidences of small abscesses. The bronchial markings were coarse and heavy.

The sputum which contained yeast cells was inoculated intravenously in the rabbit with death in sixty hours. There was a definite affinity for lung tissue in this animal's tissues at autopsy. The lungs were markedly congested, sticky, with areas of consolidation interspersed with areas partly air containing. The patient did not improve on any plan of treatment and finally died of myocardial failure.

A white man of 36 years complaining of weakness and difficulty in breathing. Occasional hemoptysis of very small amounts. Profuse expectoration. Low blood pressure. Physical signs revealed no areas of infiltration. Sonorous and sibilant rales on deep inspiration were heard. Prolonged expiratory sound over both backs. Kroenig's isthmus on both sides normal (seven to eight cm.). The temperature curve showed a slight rise to as much as 99.5. The fluoroscope showed the angles of the diaphragm obliterated. The heart occupied the exact center. Plates revealed the heaviest markings I have ever seen. There was evidence of what was regarded as an abscess scar at the right interlobar position. Very heavy left hilus shadow. Apices clear. Many bronchiectatic rings throughout. Pathogenic yeast found in the sputum which was fatal to the rabbit.

There are many instances in the literature of pleurisy, cavitation and hemoptysis which are proven to be non-tuberculous and in which there is a strong justification for suspecting that one of the pathogenic yeasts present is the etiological agent. From a point of view of the safeguarding of the public extreme conservatism must be exercised for it has taken too long and too much cost of all sorts to educate the laity and the medical profession up to an intelligent evaluation of the importance of pleurisy, slight hemoptysis and slight fever as infallible signs of phthisis for us to weaken the argument in any way, especially in suggesting another possibility offering an easier way of escape. Until bronchomycosis can be definitely determined by the general practitioner and by ordinary laboratory procedures little can be expected in the way of another source of relief to the chronic pulmonary invalid. There can be no doubt, however, that there is a large group of cases which clinically

cannot be distinguished from tuberculosis either by symptoms or physical signs and indeed frequently by the roentgenogram. In such cases many searches for the tubercle bacillus are unsuccessful. In these cases the yeast is easily discovered in the sputum directly by the Unna-Pappenheim pyronin methyl green stain which stains the yeasts a bright red and the nuclei of the various cells a sharp blue. Best of all is rabbit inoculation and the recovery of the yeast in pure culture from the organs at autopsy. As the French have so clearly and repeatedly shown in many of these cases (which are abundant in North Carolina) life can be dramatically saved by a diagnosis first and then the free use of iodine. In addition to this the autogenous vaccine often is a brilliant remedy. Vaccine therapy of the yeast order gives one an entirely different conception of the whole matter and the sceptic who has turned away from bacterial vaccines can take hope if the organism is a yeast. The best treatment is the combination of the vaccine with the iodine. But rest and good nutrition is just as important as in phthisis for the damage to tissue and general action of the infection in the two diseases differ very little. So if the chronic lung case after twelve or more negative sputum examinations for tubercle bacilli and positive examinations for yeasts can be diagnosed the chances for recovery with treatment are good. Unlike tuberculosis without treatment the chances are poor.

There is another important role of the yeasts in the respiratory tract according to the Europeans but more especially the French. This is the occurrence of the yeast infection complicating tuberculosis. Some mycologists would likely say I had the cart before the horse, for they think that the mycosis frequently preceded the tubercle. The clinical signs and symptoms usually do not suggest such a possibility but the roentgenogram will frequently present anomalies one of which is abscess formation which justifies a further search. It has occurred to me that this secondary invader or mixed infection may account for some of the disappointment of the phthisiologist when an apparently promising case of phthisis recognized early and with everything favorable apparently goes down hill in spite of good management. I recently found such a condition in a medical friend. The roentgenological findings were out of all proportion to his condition and while the tubercle bacillus was found there was also present a peculiarly virulent yeast. In another striking case which was also tuberculous the mycosis overshadowed the situation and was the really important thing from the patient's standpoint for all the treatment for phthisis is not likely to cure a yeast infection.

In conclusion I would like to leave the single impression with you that when you have an infectious process with negative bacteriological returns think of the yeasts and inoculate a few tubes of Sabouraud's dextrose agar made so acid that bacteria will not grow on it, incubate at room temperature or at thirty degrees C. for forty-eight hours and then note results.

DISCUSSION

Dr. Alfred Blumberg, Oteen: In our hospital we have an average of as many as 1,400 sputum examinations every month, and about two per cent of those specimens show evidence of yeast. I must admit that

to a great extent I am guilty of having neglected to consider yeast as a pathological entity, and I am grateful to Dr. Wood for having presented this paper on the subject. I remember at the time I commenced studying bacteriology there were perhaps no more than ten specimens that were introduced to us as playing parts of importance in the disease of man. Rather recently I had a case at the hospital in which the diagnosis was made under compulsion. In looking up the literature I found an overwhelming confusion as to the classification and separation of the various specimens. There is still confusion existing, which will lead to many mistakes in diagnosis; and as long as we have not the proper diagnosis we are certainly not giving the proper treatment. I am very greatly indebted to Dr. Wood for the kind cooperation he has given me when I have asked help; I am very deeply indebted to him for his paper and for the assistance he has given me at various times. I must say I differ from his technic in that I use a different medium, not that which he modestly calls Sabouraud's medium, but which should be called Wood's medium. I have succeeded in getting several strains isolated. Of course that is not many, and I shall communicate with Dr. Wood in the future.

Dr. Wood, closing the discussion: I have been tremendously interested in the growth of the tubercle bacillus on this modification of Sabouraud's medium. However, it has not simplified the problem of picking out the yeast in cases in which the yeast complicates phthisis. The appearance of the yeast is so distinctive that even a laboratory boy, after a few times, can pick out the colony. I am sorry Dr. McCain is not here, because some of my work has been done through his courtesy. Dr. McCain was good enough to send me the feces of his diarrhea cases, which are so frequent in his class of work. In one instance I found a yeast which did not conform to the intestinal types and I suggested that he send me the sputum because I thought very likely the patient had swallowed the sputum and I was finding a bronchial organism. We found the same organism in the sputum. I think it was that patient whose death I reported and autopsy study was done. The giant cell formation was certainly suggestive of tubercle but the differentiation can be readily made.

LOW BLOOD PRESSURE

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In the beginning I want to offer two apologies. The first is for dignifying a symptom with a paper; but if books are written upon high blood pressure, why not a brief paper upon the opposite condition? The second apology is for the frequent use of the first personal pronoun. My only excuse is that one's individual experience is at least more sincere and genuine than a compilation from text-book authorities. A recent article in the *Atlantic Monthly* upon the religious situation was based upon the text, "We are passing from authority to experience." Whatever the aptness of this dictum for our theological brethren, it is not a bad idea for the medical profession to adopt.

My interest in low blood pressure was aroused during the recent influenza epidemic. This paper is the result of an effort to clarify my own thoughts upon the subject.

It is difficult to give arbitrary definitions of low, average, and high blood pressures. Nicholson's rule for the average is perhaps the best available. "Begin at 120 systolic for an adult male of twenty and add half a point a year. Women have a slightly lower pressure than men." This rough rule is far more accurate than the one so dear to the laity: "the age plus 100," but even it gives a higher average than insurance records show. For the following table of average blood pressures, as well as for much valuable help in preparing this paper, I am indebted to Dr. J. T. J. Battle, Medical Director of the Jefferson Standard Life Insurance Company.

Age	*Average*
20	120
30	122
40	125
50	129
60	134

In overweights this average pressure is slightly increased.

Variations between 4mm above and below these central figures are included within the average; 5 to 15mm below are considered under-average, 5 to 15 above, over-average.

While it is hard to set an arbitrary limit, Osborne (1) says: "A systolic pressure of 110mm or lower in an adult should be considered hypotension, anything below 105mm calls for treatment, and a systolic pressure of 100 or lower in an adult calls for rest from all active duties."

If we consider a systolic pressure of 110 or less as hypotension, and 140 or more as hypertension, I believe that there are at least as many individuals with hypo as with hypertension. By way of experiment, I tabulated 100 consecutive adult patients who came to my office, and asked my friends, F. M. Hanes and T. C. Redfern to do the same thing. The average of the three records is as follows: 140 or above, thirty-one; 110 or below, thirty-seven; between 110 and 140, thirty-two.

An interesting corollary of this observation is that in this series twice as many people had abnormal pressures—below 110 or above 140—as had normal pressures.

In discussing the subject of hypotension, let us recognize two classes,—acute or temporary and chronic or persistent.

1. Acute or temporary hypotension may be due to profuse hemorrhage, nausea, shock, or fainting. Such causes are obvious and require no further elaboration.

The condition that I have in mind particularly is low blood pressure associated with and following acute infectious diseases, notably influenza. Since 1918 influenza has overshadowed all other infectious diseases so tremendously that it is but natural that its characteristics should have taken first place in our clinical observations. While a typical case with upper respiratory symptoms in the foreground is one of the easiest of all diagnoses to make, there are so many possible variations that its recognition may be most difficult. What active practitioner has not seen within the past few years cases of influenza that simulated among other things appendicitis, typhoid fever, laryngeal diphtheria, meningitis, ileo-

colitis, and tuberculosis? In attempting to make a differential diagnosis I have learned to rely upon a low blood pressure as one of the most constant findings in "flu." The systolic pressure falls within the first two or three days from ten to sixty points, the diastolic about in proportion. This low pressure persists from a few days to some months, depending largely upon the time spent in bed, and may never regain its former level. In my experience, the patients that have had the most marked drops in pressure are those who have had such mild cases of grip that they did not stop until forced to do so by marked weakness, sometimes fainting. An interesting observation is that hypertension cases show a great drop in pressure also—in one of my cases from 180 to 120, in another from 240 to 170. They seem to feel "let down" as much as normal pressure cases, until they regain their normal level.

As to the actual cause of these acute attacks of hypotension I confess I do not know. Most of them recover too quickly and completely to have been caused by actual damage to the myocardium, though undoubtedly many are due to this. The theory that appeals most strongly to me is that during an acute illness there is an increased demand made by the system upon the adrenal gland which special effort is quickly followed by a temporary decrease of its secretion. This deprives the vaso-motor system of its natural tonic.

The symptoms of this low blood pressure are painfully familiar to those of us who have been victims of "flu"—marked weakness, sweating upon exertion, a feeling of weariness as though one has been exercising strenuously, dizziness upon sudden change of position, and a feeling of utter depression—physical, mental, and spiritual!

Its duration depends upon several factors, including the patient's natural vigor and power of recuperation, the care he takes of himself during and after his infection, and possibly the clearing up of any lurking foci of infection. I have seen a systolic pressure rise twenty points within three days, and have also had my own pressure, among others, take three or four months to climb up ten or fifteen points.

In pneumonia there is also a drop in pressure. This is, according to Gibson, of value in prognosis. I am glad to be able to say, however, that this rule has failed oftener than it has proved true in my cases. You are all familiar with Gibson's rule—if the systolic pressure, expressed in millimeters of mercury, is less than the pulse rate, the prognosis is ominous.

I have not had a sufficient number of cases of typhoid fever of late years to note its effect upon blood pressure; but in two cases seen the past summer the fall in pressure was not nearly so sudden nor so marked as in influenza.

In the treatment of this acute hypotension, rest is an absolute necessity. Every patient with a grippy cold, even without fever, should stay in bed during the acute stage, and every patient with fever should stay in bed from one to three days after the temperature is normal, then take an equal length of time to convalesce before going to work.

An important part of the treatment is a nutritious diet that is easily digested. Coffee and tea, unless there is trouble in sleeping, may be allowed freely for their stimulating effect.

As for drugs, digitalis combined with nux vomica is very useful. I frequently employ the following prescription:

Tinct. digitalis
Tinct. nucis vomicae, aa dr. 6
Tinct. gentian comp. q. s. ad. oz. 3
M. Sig. Teaspoonful in water t. i. d. a. c.

Adrenalin would seem to be indicated theoretically, but its action is too fleeting to be of much value. Caffeine may be employed most pleasantly in the form of coffee.

Thyroxin and ephedrin have both disappointed me. In one case, thyroxin seemed to bring up the pressure, but has failed in others to do as much as digitalis. Ephedrin in one case of my own and in other cases I know of failed to add one millimeter to the stature of the mercury column. I suspect, however, that there was something wrong with the preparation used, and expect to give this drug further trial.

II. *Chronic or Persistent Hypotension.*

In certain diseases, notably tuberculosis and Addison's disease, the blood pressure is lowered markedly. In anemia hypotension is usually present. Myocarditis, fatty heart, and mitral stenosis are organic heart conditions responsible for low blood pressure.

Coronary thrombosis causes the most sudden and dramatic fall in blood pressure. I recently had a patient, a man sixty years old, whom I examined late one afternoon, and found his systolic blood pressure 170. That night he had a coronary thrombosis and his systolic pressure dropped to 90. After prolonged rest it has gradually risen to between 110 and 120.

Among drugs, the habitual use of the coal tar products causes a very low pressure.

The effect of alcohol upon blood pressure is a much disputed point. If our pharmacological teaching is correct, the effect of a single dose of alcohol is to lower the pressure; and only after its long abuse has brought about changes in the kidneys or arteries would it be raised. Even this is a doubtful point.

As to tobacco, opinions vary still more widely. Sir Lauder Brunton is quoted (2) as stating that "anybody who presents no signs of tuberculosis and every evidence of health otherwise, but who nevertheless carries a blood pressure of 100, is an excessive smoker in nineteen out of twenty cases." On the other hand Sir Humphrey Rolleston, (2) Regius Professor of Medicine at Cambridge University, asserts that smoking raises the systolic pressure from five to twenty points. The same view is taken by Osborne, (1) of Yale, in his excellent monograph, "Disturbances of the Heart." So keen an observer as Riesman (3) says, "In hypertension—I am opposed to the use of tobacco much more than I am to the use of alcohol." But Sir Clifford Allbutt, (2) who did not use tobacco himself, thought the influence of tobacco on hypertension was negligible. So, in the words of Mr. Dooley, "there ye are."

So far as I can learn, no one has compared the blood pressure of a series of smokers and non-smokers of the same age and sex. I have begun such a study which I expect to make the basis for a future paper. So far

as I have gone the difference in the average blood pressure of adult male smokers and non-smokers is negligible.

In a study of the effect of alcohol and tobacco upon the human system, one is impressed with the free use of dogmatic statements of mere impressions and the lack of accurate observations.

One cannot help but regard as appropriate the words of old Omar—

> "Myself when young did eagerly frequent
> Doctor and Saint, and heard great argument
> About it and about: but evermore
> Came out by the same door where in I went."

The great number of hypotension cases are found among the slender, narrow-chested, long-waisted individuals complaining of perpetual fatigue whom we designate neurasthenics or "asthenics." Fossier, (4) of New Orleans, in the American Journal of the Medical Sciences for April 1926, has a masterly discussion of this group of cases. He is convinced himself, and will convince most of you who read his article, that the so-called essential hypotension is a symptom of splanchnoptosis and is due to the following mechanical factors: "(1) the ascending aorta is lengthened and the distance from the heart to the upper portion of the arch of the aorta is thus considerably increased; (2) the smaller hemicircle of the arch of the aorta increases the resistance to the flow of blood." This thesis is based on the following hydraulic principles: "When water flows around a bend, loss of head occurs due to the fact that rotational energy is imparted to the water in passing around it. This loss depends on the diameter of the pipe, on the radius of the bend, and on the angle of deviation." Also: "The longer the pipe is, the greater the percentage of energy that will be used in overcoming friction, and the smaller will be the final velocity energy."

Again I quote: "Essential hypotension is not found in every case of splanchnoptosis, but any factor which diminishes abdominal tension, such as loss of fat, weakness of the abdominal parietes, especially after parturition, or during the wasting infectious diseases, predisposes to low systolic pressure."

The symptoms of chronic hypotension are practically the same as those given for acute hypotension, namely, physical and mental fatigue, vasomotor instability, and even loss of memory. Riesman (5) notes that indecision seems a noticeable attribute of the character of these patients.

The prognosis of life for low blood pressure is much better than that of hypertension. In fact, a moderately low pressure adds materially to one's expectation of life after the age of 25, as evidenced by the following insurance table, for the preparation of which I am again indebted to Dr. Battle.

"Percentage of actual to expected deaths, comparing 'below average,' 'average,' and 'above-average' systolic pressure."

Ages	*Under-average*	*Average*	*Over-average*
Under 25	71%	70%	66%
25-39	66%	68%	79%
40-49	63%	66%	78%
50 and over	58%	68%	79%
All ages	64%	68%	77%

While hypotension cases may live longer, it is true that as a class they do not feel as alert and vigorous as those with higher pressure. The condition seems analogous to an automobile with a low-powered motor which has not the speed nor the power of a car with a larger motor, and hence wears more slowly. That they do live so long, as a class, is perhaps due to the fact that their low blood pressure tends to inactivity.

Under the heading of prognosis the point may be made that an individual with a decidedly low blood pressure is not a good surgical risk. There is too small margin between safety and shock. It is not a bad idea to digitalize such patients before major surgical operations. This class of patients furnishes most of the post-operative neuroses.

The treatment of chronic hypotension is, of course, that of the underlying condition. If of the enteroptosis type—the most frequently encountered—a prolonged rest may be necessary, as well as exercise to strengthen the abdominal muscles, possibly an abdominal support, and a full diet. Clendening, (6) of Kansas City, in his excellent work, "Modern Methods of Treatment," gives a most interesting account of the good results he obtained in a group of army cases with enteroptosis. He did not mention their blood pressure, however, so I wrote him for his experience with this symptom. His reply was: "It has been my experience that these cases are certainly definitely of low blood pressure. Under improvement, their blood pressure does rise. My army cases showed a remarkable change in this respect, one of them going from a systolic of eighty to a systolic of 115."

One patient of my own, a school teacher with marked enteroptosis, after a rest, exercise and a suitable abdominal support, showed a rise in systolic pressure from ninety-four to 125.

From my own observation, I have been convinced that the number of individuals with low blood pressure has increased since 1918, when influenza began its campaign. To clear up this point, I asked Dr. Battle for the experience of insurance companies for the year 1917—before the great influenza epidemic—and for the year 1925. Sparing the details, the average systolic and diastolic pressure for every age group in 1917 was higher than for the corresponding age group in 1925. The average systolic pressure for more than 25,000 individuals, twenty to sixty years of age, in 1917, was 126.65; for 10,000 in 1925, 124.8. The diastolic pressure shows even more variation, declining from 84.85 in 1917 to 79.6 in 1925.

It is only fair to state that Dr. J. W. Fisher, (7) Medical Director of the Northwestern Mutual Life Insurance Company, thinks this decrease is not real but is due "to the improvement of medical examiners together with the adoption of the wide arm band." In 1917, however, we were using the same width arm band as at present. As to the

"improvement in examiners," should not increased experience in listening for pulse sounds lead to a detection of a slightly higher rather than a lower systolic pressure? And the old palpation method certainly gives a lower reading than the more modern auscultation method.

A number of reasons are given by the insurance committee making this report. "It may be due to better instruments and more accurate readings. It may be attributed to less hearty eating than formerly, to a greater knowledge of the effect of food on health and a tendency to eat less animal protein. It may also be that the public have been rapidly educated to a realization of the unfavorable effect of high blood pressure." Perhaps some of these factors may count, but most of them appear rather far-fetched. Three important possibilities have been omitted. First and foremost, the greater prevalence of influenza or "grip"; second, the intensive drive that has been made upon focal infections; third, the tremendous growth of the automobile industry and a corresponding decrease in walking have been responsible perhaps for more individuals with weakened abdominal muscles and consequent enteroptosis.

SUMMARY

1. A systolic pressure below 110 in the adult may be considered low.
2. Low blood pressures are encountered more frequently than high ones.
3. Blood pressure does not rise with age as rapidly as is generally supposed.
4. Acute or temporary hypotension may be due to a number of causes, but is most often encountered as a sequel of acute infectious diseases, especially influenza, and is probably due to adrenal exhaustion.
5. Chronic or persistent hypotension is encountered in certain diseases, but is most often found in individuals with enteroptosis. Its treatment depends upon the underlying condition.
6. Low blood pressure favors longevity, but not physical vigor.
7. There has been a very perceptible decrease in systolic and a still more decided decrease in diastolic blood pressure within the past eight years, which may be partly accounted for by the increase in influenza.

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DISCUSSION

Dr. J. T. J. Battle, Greensboro: The one who expresses a thought or an idea that is new or makes an observation that has never been brought out before is a leader of his fellows and is really living in the coming generation. This is what the author of this paper has done, and his observations are worthy of much consideration.

Dr. Johnson has gotten himself into difficulty unless he wants to work, because there will be a lot of difficulty in his explaining low blood pressure after influenza has gone. Let me disagree with him just for a moment. I have seen very active men, football players, athletes, and brilliant men mentally who had low blood pressure. The question is, if a man's heart is pumping at the rate of seventy-two beats per minute and is carrying the same amount of blood through the muscles or through the brain, whether that man is not getting the same amount of blood in the brain as if those arteries were contracted and the blood were flowing through faster. While the arteries are dilated he is getting more blood there but not quite so fast. That is a question in my mind. I leave it to Dr. Johnson, who has made so everlastingly good in this paper, and I shall not hold to that point if he says it is not true.

There is another point I want to make. Why should a man's blood pressure increase as he grows older? It is evidently on account of some impairment. If a man is in normal condition I do not believe his blood pressure should increase with age.

Dr. Carl P. Parker, Seaboard: Dr. Johnson has evidently given very careful study to blood pressure in writing this paper. It is a well prepared paper, and it has confirmed my belief that what we do not know about blood pressure is about as much as we know about it. I have two patients whom I want to compare. One patient's blood pressure we have taken on numerous occasions and never have found this patient's systolic pressure below 190. This man is an active worker. Then there is another patient who is a very active man whose pressure has never, on the several occasions I have taken it, been above 110. In neither patient could I find any real organic lesion present—nothing except this blood pressure. The study of low blood pressure, to take up his observation of the one hundred cases, brings out this confirmation that we do not know much about blood pressure, for of the hundred cases there were thirty some above the average, thirty some within the average limits, and thirty some below. That was his observation. Now, if that be the case, what is the average blood pressure? Are we to say that a pressure of 160 is high, or are we to say that a blood pressure of 110 is low? The blood pressure is something to which we have to give careful study.

I have enjoyed the paper and have enjoyed the discussion by Dr. Battle, and I should like to hear further discussion.

Dr. Wesley Taylor, Greensboro: Dr. Johnson's paper was very valuable, and I should like to hear more along the same line. I have been interested for a number of years in blood pressure; I have been interested because I found a certain number of my patients had low blood pressure, and I wondered why they should have it. I have not made up my mind entirely about it and shall probably change some of the ideas I already

hold. I notice that my neurasthenics and psychasthenics and asthenics have low blood pressure. It is a symptom which goes with depression. Most low blood pressure cases are depressed, I find. I do not always know why blood pressure should be low or why it should be high, but it occurs to me that an explanation might be sought along the line of the elimination of toxins. Why do we have blood pressure? We have blood pressure so that the urea and other poisonous products may be taken out of the blood. If our kidneys are in good condition and acting well we do not need unusual pressure. As a man grows older and his tissues become a little firmer, a little harder, a little more impervious, the filtering tissue in the kidney requires a higher pressure to get the urinary secretions through. If you have an ordinary filter and you put in muddy water, your filter pores become filled up and water passes more slowly; it requires the water to be higher in the filter to get it through. Does it not follow that if your kidneys are acting normally you do not need high pressure? But if the toxins in the blood have hardened the tissues of the kidney, you do need more pressure. Just what the relation of a lowered blood pressure is to the depression that I find is a thing that has puzzled me, and it is a thing on which I should like to get more light.

Dr. W. P. Knight, Greensboro: Is it not possible to have either high pressure or low pressure with perfect good health? If you will excuse me for referring to my own family, I might say that my wife's pressure for years has been from ninety to 110, and she thinks nothing of driving from Greensboro to Charlotte or Wilmington without fatigue. She is very active in civic organizations and looks after her family of five children. I regard her as a perfectly normal woman, healthy in every respect. It therefore occurs to me that we might have high blood pressure or low blood pressure with perfect health.

As to Dr. Battle's suggestion about drinking water, we might judge from that that we should not encourage our patients with high blood pressure to drink water, but I think we should for the sake of elimination. The fact that water is taken into the stomach does not necessarily mean that the capillaries will take it up and so increase the pressure, but it will help elimination.

Dr. Wm. M. Jones, Greensboro: Dr. Taylor, in his discussion, brought up the question of certain toxic substances circulating in the blood. It appears to me that possibly certain of these substances act as stimulants to the adrenal glands and after a certain time these extra substances acting as stimulants to the cardiovascular system produce hypertension. Is it not just as reasonable to suppose that other toxic substances, acting in the opposite of this, should cause a depression of the amount of epinephrin, if that is the substance that does it, cause a less amount, thereby reducing the amount of tone and the amount of tension on the heart and the blood pressure? We say that we do not use epinephrin in hypertension because it acts at such a rapid rate for such a short time. Isn't it reasonable to suppose that the adrenals supply this in a sort of drop by drop method that holds the pressure up, and when

you push the whole thing in there it gives a flutter and that is all there is to it; the entire amount acting at once.

Dr. P. R. Hardee, Stem: There is a great deal more that we do not know about blood pressure than there is that we know, as Dr. Johnson said. That expression of his reminded me of my experience fifteen or eighteen years ago, when this subject of blood pressure was being discussed so freely and generally and the sphygmomanometer was just coming into general use among the profession. When we arrived at that period I bought a sphygmomanometer, and I added to my library what was thought to be the best treatise on blood pressure that was extant at that time. Before I commenced to use the sphygmomanometer I read that text and reread it, until I felt that I was reasonably familiar with it. But when I commenced to use the instrument I found a good many conditions that the text said nothing about, and some of those have not been mentioned here in the discussion of this paper or in the paper. I suppose it is perfectly legitimate for me to speak of one or two of these conditions which I have encountered. I remember I had not been using the sphygmomanometer a great while before there came to my office a woman of about thirty-five or forty years of age whose heart had lost its compensation and was going at something like 160 to 200 a minute. I had been accustomed to find that the most frequent cause for that, in my observation, was a mitral regurgitation. Not having a very acute ear, I never could hear the murmur when the compensation is ruptured. I put that patient on digitalis to slow the heart down, and then I thought I would confirm my tentative diagnosis. But when the heart became digitalized down to 100 or around there, when I could hear a murmur, I found there was no murmur there. The heart was acting perfectly all right. When her supply of digitalis gave out the compensation ruptured again. In that condition I took the blood pressure and to my surprise found it 180 to 200. The book told me that a continued high blood pressure would rupture the compensation, and I was lost. I had expected a low blood pressure, and it was quite a while before I could work out the link. You may expect and you will find in these cases of continued high pressure that you have a broken down heart and broken compensation after a while just as sure as you will in mitral regurgitation.

Dr. Johnson spoke of focal infection. That is a very interesting thing for all of us in studying blood pressure. We may imagine it is caused from this or the other, but I believe where you have an abnormally high blood pressure or abnormally low blood pressure there is some abnormality with the blood, with the composition of the blood. On one occasion some ten or twelve years ago I had an old Confederate veteran under observation who had been suffering with rheumatism at times. I had noticed for years that the pulsation of the heart seemed to be extremely weak; it was little more than barely audible in auscultation. He went on and on. Finally he sent for me some six or eight years ago, suffering greatly with dyspnea. He had the windows open, he could not sleep, he was air-hungry, and it took somebody to fan him all night long. There was a case of practically no blood pressure, though of course there was some. I thought the practical thing for him was digitalis and heart

stimulants. I tried one, and he failed to respond; I tried another and went on through the list, and his heart did not respond to any of the cardiac stimulants. Much was being written at that time on the endocrine glands. I decided that, as I could not find anything else, I would give him a little thyroid extract. I gave him a small dose of thyroid extract one day and went back the next day, and his heart was beating just as nice as a twenty-year-old heart. It cured him at once. There was a deficiency of something in his blood that helped to maintain the circulation. As long as he was under the influence of the thyroid extract he had no trouble whatever. I did not take his pressure, though, while in that condition.

Dr. G. G. Dixon, Ayden: I have never been able to understand tension, hyper- or hypo- or normal tension, and I should like to ask that our section next year follow up this paper of Dr. Johnson's with a symposium on tension and the whys and wherefores of it. Blood pressure, we know, is a symptom, whether it be high or low, and there are several things we must take into consideration. I have a patient who has to go to bed if her blood pressure drops below 250. She is five feet four inches tall and weighs 400 pounds. I think size has something to do with it. Another thing to be taken into consideration, I think, is age, and another thing is whether tobacco has any effect. I saw 200 men examined once, and about fifty per cent used tobacco and about fifty per cent did not. Those who did not use it showed a pulse pressure of about 12 millimeters below those who did, so we thought that tobacco had something to do with it. Then one's physical condition has something to do with it, as well as the amount of physical exercise, the time of day, and the condition of elimination.

What part do the endocrine secretions play? I believe when we get to the point where we know what blood pressure means if we find a person normal in every other respect has a high tension we shall find he has a hypersecretion of some of the endocrine glands, and if he has a hypotension we shall find he has a hyposecretion of some of the endocrine glands.

To me, blood pressure in itself does not mean anything. Blood pressure following influenza I have watched considerably. I find a decrease in blood pressure following influenza; some patients with high pressure before would have a low pressure after an attack of influenza. I want to ask Dr. Johnson whether in the cases of low blood pressure it is pulse pressure or arterial tension that is decreased or both. Also, does he ever find any cases of nephritis with hypotension? When I started practicing medicine I decided to myself that I was going to be a straightforward young man and would never take any of my patients to bed with me. I succeeded very well until I got a man seventy years old, with hypotension. I took him to bed with me and took him to see all my other patients. Still the old man's pressure stayed low. His blood pressure reading was 95-80, the pulse pressure 10-15 millimeters of mercury. I gave him everything in the drug store and everything in the grocery store, and still his blood pressure stayed low. Then I began giving him pituitrin, and I found the effect would last about four hours. It would increase his blood pressure about twenty-five millimeters. I kept him on pituitrin

for about four weeks and got it up from 95-80 to 120-80. He came to see me a few weeks ago, and I found his pressure was 170-90. It was too high. I found he was constipated, and when that condition was corrected his pressure dropped. Do we have a kidney condition with a low pressure, with a diastolic pressure lower than 80? I have never discovered any kidney condition with a diastolic pressure lower than ninety.

Dr. R. P. Noble, Raleigh: I want to give some statistics. I am a non-smoker, never smoked in my life; and I have a low blood pressure but more pep than two-thirds of the fellows in this room.

Dr. Johnson, closing the discussion: As to why pressure rises with age I do not know, except that with age we accumulate focal infections, the arteries are harder, etc. I think the point is very well taken as to the active individual with low blood pressure; I think there are lots of them. They are the exceptions that prove the rule. As a rule persons with low blood pressure do not feel as well and are not as active. I think it relates to physical vigor rather than mental vigor.

I fully agree with Dr. Parker that there is more about blood pressure we do not know than there is that we do know. As to the average blood pressure, that is purely an arbitrary limit. I think individuals may have an average blood pressure for them, which may be above or below what we have set as the average. But we have to set a standard.

Dr. Taylor asks why we have high blood pressure. That is beyond me.

Dr. Hardee touched on a big subject in speaking of his Confederate veteran. I believe in the next few years we shall learn a lot about the internal secretions that we do not now know.

Dr. Dixon spoke about the pulse pressure. My experience has been that if you get a lower diastolic pressure you get a lower systolic pressure, making the pulse pressure stay about the same.

As to the question about nephritis, I have in a few cases of old people with low blood pressure found a few casts and albumin.

If you would take the time to send me some statistics as to age, height, and weight, and a few facts about the individual, with the systolic and diastolic pressure, I should be very much interested in tabulating them.

THE RELATION OF THE ENDOCRINES TO OBESITY AND WEIGHT REDUCTION

By Verne S. Caviness, M.D., Raleigh.

Obesity is a disorder of metabolism in which there is an excessive deposit of adipose tissue in the body. The distribution is, in general, symmetrical in distinction from lipomata. Instead of normal oxidation of assimilated foods, there is a conversion into fat globules which are deposited over the body.

Obesity occurs in a variety of forms. The plump well formed person perhaps has the normal amount of fat. As we pass up the scale of weights, we reach the happy, jovial fat man with whom everyone laughs.

Increased obesity gradually ceases to be comical and finally becomes pitiful.

All obese persons are physical defectives. They represent a congenital weakness or defect of the endocrines, or a wearing out of the endocrines and of the metabolic control of the body. It represents misdirected energy on the part of the body metabolism.

There has been much conjecture regarding the etiology of obesity. For many years, over-eating, alcohol, chronic constipation, sedentary habits, anemia and climate were considered causative. Many obese persons could be associated with one or more of these conditions, but an erroneous conclusion was drawn from correct major and minor premises.

If alcohol produces obesity in one person, why, one may ask, does the same cause not produce a like result in all other persons under similar circumstances? Practically all women are more or less constipated, but why are so many of them under weight and pleading for some of the surplus adipose tissue so many of their more or less well-favored sisters are so anxious to lose.

Also, why do so many persons who eat very sparingly and of well selected diet continue to gain weight? Many of these individuals are rather sensitive regarding their weight, and diet to the point of severe hunger but to no avail; others eat in large amounts in the futile effort to gain weight, or are gluttons for the mere enjoyment of eating, and remain of normal weight or are underweight.

It is evident that there is provided an accurate mechanism for control of body weight. This mechanism functions through body metabolism. A familiar picture is that of the victim of diabetes mellitus who once robust and strong, or more likely obese, under the ravages of this metabolic disorder, develops a high basal metabolic rate; carbohydrates are wantonly cast away through the urine and body tissues are oxidized by the high metabolic rate in its mad rush demanding an ever increasing amount of fuel with which to consume its helpless host. Here is a condition in which the metabolic rate is raised and the obesity disappears.

In general, obesity presents a lowered basal metabolic rate. This varies from a low normal rate to the extremely low rate of myxoedema. A well balanced diet may be eaten but instead of a normal oxidation in the tissues, food is converted into fat and deposited over the body.

The cause is loss of function of a portion of the endocrine system, commonly attributed to the Islands of Langerhans in the pancreas. Here is a rapid weight reduction attended by unthinkable danger.

There are three main factors in the production of obesity. A deficiency of the internal secretion of the gonads is probably the most frequent cause. This has apparently no relation to the reproductive function of the glands. Hypothyroidism ranks second and hypopituitarism ranks third.

Investigators have almost entirely neglected the endocrines until very recently. Various medical writers in the past half century have referred to them as interesting glands with no known function. Even at the present time, we know very little regarding the actual functions of endocrine glands.

The greatest difficulty in investigating the endocrines lies in the plural action and in the interrelation of functions. All the members of the Chromaffin system receive their nerve supply from the sympathetic nervous system. This portion of the nervous system is only partially understood; hence the difficulties in understanding some of the actions of glands operating under its control. Very few, if any of the glands function independently and when there is an aberration of one gland, others are usually involved.

In pregnancy we see a remarkable correlation of glands of internal secretion; the ovaries enlarge and form a new substance, corpus luteum; the thyroid is frequently enlarged; the pituitary is enlarged; the breasts are enlarged. Usually there is a marked increase in weight due to disturbance in the three endocrine glands that control body weight. After delivery, the breasts begin the secretion of milk while the other glands return to their normal state. All this is effected by the meeting of an ovum with a spermatozoon.

In a study of the functions of the gonads we find many illustrations of the actions of these glands. Occasionally we see nymphomania. Such persons are thin, agile, of strictly feminine type, present a normal arrangement of hair, but have overacting ovaries.

In contrast, we study eunuchs. Their gonads have been removed before adolescence. They have high-pitched voices, are fat and have an abnormal distribution of fat on the body.

We are familiar with the picture produced by castration of animals for the purpose of producing obesity, or as is commonly termed, "for fattening."

We are familiar with the type of women who have had both ovaries removed surgically. Usually they become obese. This obesity is not due to a loss of reproductive power, but, as in eunuchs and castrated animals, is due to a loss of the internal secretion of the gonads.

The external secretion of the testicles is produced by the seminiferous tubules, which constitute the major portion of the gland. Between these seminiferous tubules are scattered peculiar interstitial cells called "Cells of Leydig." These cells are grouped about the blood vessels and no particular association with lymphatics or nerves has been discovered. These cells are among the first to appear in the testicle during its early development. Their growth is rapid until the fifth month of intra-uterine life. They are then quiescent until puberty. Throughout life there is an embryonal tendency in these cells, shown by the tendency of malignancy of the testicle to originate in these cells.

Further reasons to believe there is an internal secretion from the gonads is seen in men or animals whose testes have been exposed to X-rays. There is loss of reproductive power, yet no loss of sexual desire, or of ability to perform the act of copulation.

The ovaries differ but slightly from the testes. They have internal and external secretions. The external secretion consists of rupture of the graffian follicles, perhaps associated with the periodic ovulation. The internal secretion of the ovary has identically the same general action as of the testes. After a woman passes the climacteric and her ovaries undergo atrophic changes, there is often a gradual increase in weight,

frequently extending over several years and at times reaching an extreme degree of obesity. When a man passes forty-five to fifty years of age and begins to lose his sexual power, he may likewise develop an error of metabolism and become obese. Apparently, in both these types we have a direct relationship between the gonads and fat metabolism.

In pregnancy, while the ovaries are busily occupied in the production of corpus luteum, there may be a decrease in the activity of interstitial cells. During pregnancy, there is a tendency to an excessive deposit of fat. Following delivery many women gain weight rapidly. We are dealing here with ovaries that have functioned at high tension for nine months. Suddenly, this tension is relieved and we must consider the possibility of a functional relaxation and failure of normal action. The absence of menses for a few months after labor is apparently the concomitant result in the reproductive portion of the glands.

The thyroid is entirely a gland of internal secretion. It has no ducts, it is composed of small follicles, each apparently independent and containing colloid rich in iodine. This is the secretion of the gland and its active principal is thyro-oxy-indol, frequently shortened to thyroxin. This is absorbed into the blood stream and has a variety of actions in the body. This is one gland that produces apparently a full effect when administered by mouth. Thyroid extracts have been used for years for the treatment of various forms of thyroid deficiency. Perhaps the action can be studied best by considering a person who has had the thyroid gland removed surgically, or destroyed by disease. The person gains weight and fat is frequently excessively present about the neck, face and shoulders. The person has a sleepy, lethargic appearance, becomes inactive and is often termed lazy. The eyes are puffy, and the person is frequently below par mentally. This condition is called myxoedema. But if the thyroid be congenitally absent or deficient, the child grows very little. It is called a cretin. It has mental deficiency, is subject to disease, and shows a very slow or absent sexual development.

At times the thyroid gland enlarges, or without an enlargement produces an over-secretion of thyroxin. This produces a condition known as hyperthyroidism.

The pituitary gland has the peculiar characteristic of increasing greatly in size during pregnancy. Our knowledge of this gland is very limited. Investigation has been carried on principally with the whole gland and one cannot separate clinically the anterior and posterior lobes. However, it is thought that a deficiency of the posterior lobes gives an overgrowth of the body tissues; gives a faulty development of the sex organs; produces various menstrual disorders, and produces diabetes insipidus. While observations regarding the pituitary have been rather meager, it appears that usually a deficiency of one lobe is associated with deficiency of the other lobe. It is deficiency of the gland, hypopituitarism, that is concerned with obesity. Some observers claim that hypopituitarism, when present, is always associated with hypothyroidism.

In the pituitary type of obesity we find a peculiar arrangement. The fat tends to be arranged in a girdle-like mass about the abdomen, hips and upper thighs. Often the fat hangs down from the abdomen in a

great apron-like fold, hanging as much as from four to six inches at times.

These patients usually show small canine teeth and small hands with short tapering fingers. Often there is a deficiency in development of the external genitalia. The condition is known as dystrophy adiposo genitalis.

A scanty or absent menstrual flow is shown by women suffering from this condition.

Treatment for obesity is not primarily a matter of correcting physical deformity, or improving body proportions. The treatment of obesity should not aim primarily at weight reduction. Obesity is due to physical defects in the endocrine glands and the treatment consists essentially in supplying this deficiency by administering gland extracts. This is not entirely a new treatment. For a number of years thyroid extracts have been used in treating thyroid deficiency. There is often a loss of weight associated with the treatment.

There are several reasons why there should be treatment for obesity. We must not lose sight of the effect of obesity on the blood pressure. As a person gains weight there is a great increase in the capillary area. This places an increased burden on the heart and it is probable that a slightly higher tension is required to keep the blood circulating at the normal speed through the increased capillary field. Another item for consideration is that obese persons have an excess content of fatty substance in the blood plasma. This favors the development of arterio-sclerosis. In obesity an excessive amount of fat is deposited in the mediastinum. Thus we get not only an embarrassment of the heart from a decreased field in which to work, but also from a deposit of fat within the heart muscle itself.

We must not lose sight of the uncanny association of obesity, diabetes mellitus, arterio-sclerosis and arterial hypertension. We are dealing not with a mere coincidence. It is doubtful if any one of these conditions is directly responsible for the development of the others.

In all these conditions we are dealing with an endocrine unbalance and any treatment directed at any of these conditions should be aimed at the cause. When this is accomplished Nature will give as nearly as possible a return to normal of the functional derangement.

DISCUSSION

Dr. I. H. Manning, Chapel Hill: During the last ten years the endocrines have come into a great deal of publicity; they have given us a new waste basket into which we may throw many of our old medical puzzles. I was interested this morning in the discussion of the paper on hypotension to hear that hypo- and hypertension were both in this waste basket, and now we have obesity.

DuBois in his book on Basal Metabolism states that obesity is one of the commonest diseases. For the benefit of those of us who are passed fifty we may qualify that statement and look upon obesity as a symptom rather than a disease. In any event obesity has a bad name. It has been found, for example, that diabetes is especially frequent among the obese;

they are less tolerant of sugar than other people. For this and for many other reasons fat is socially and medically tabooed.

As Dr. Caveness says, perhaps the commonest cause of excessive fat is over-eating and lack of exercise,—perhaps I should say laziness. We know that just as one's bank account grows fat when the income exceeds the expenditures, so one accumulates fat when the food intake exceeds the expenditures. Notwithstanding it is remarkable how the average person will maintain a constant weight between the ages of twenty and forty in spite of an apparent wide variation in both the intake and expenditure. There appears to be some smooth-working governor at work in the maintenance of this exact metabolic balance.

It is perhaps equally remarkable that the majority of men and women grow fat between forty-five and fifty. There are several possible explanations. One, as my friend Dr. Bullitt suggests, is that men have as a rule accumulated enough or have gotten sufficiently well established in worldly affairs to take life easier, and of course women have gotten rid of the disturbing menstrual periods and many of the responsibilities of motherhood. Then there is the interesting and suggestive relationship between "fair, fat, and forty" and the loss of some function of the sex organs. The effect of removing the sex organs has been demonstrated in many animals; there is a tendency to become fat; the capon has been known for ages. The failure to acquire the secondary sex characteristics, the puberty growth, and the metabolic disturbances which lead to obesity are attributed to the interstitial cells of Leydig of the testicle and corresponding cells of the ovaries, or, as Dr. Caveness calls them, "gonads"; they may have something to do with the metabolic balance. Whether the loss of the functions of these organs is responsible for the tendency to lay on fat at forty and forty-five is, I think, doubtful. I do not know that these cells undergo retrogressive changes at this period and I think this should be established before we accept them as a cause of the metabolic upset. I have thought that laying on fat at this age might mean a stage in the development of arterial sclerosis as indicated by the increasing blood pressure.

Obesity is associated with both hypopituitrism and hypothyroidism. Kendall has shown that one milligram of thyroxin will increase the metabolic rate by three per cent; seven milligrams by twenty-one per cent, etc.; there appears to be a constant ratio between the secretion of the thyroid and the metabolic rate. In hypothyroidism the rate is low and in hyperthyroidism the rate is high, and so one may very easily believe that the thyroid governs the metabolic rate. And yet I doubt if we can say that in many instances obesity is an indication of hypothyroidism. Boothby finds, if I may report an observation at variance with the conclusions of Dr. Caveness, that only three per cent of ninety-three cases of simple obesity had a definite low metabolic rate, eighty-five per cent had a plus or minus metabolic rate within the normal range. I believe the best indication we have of a disturbance in thyroid function is the metabolic rate. I do not believe we are justified in assuming a hypothyroidism because the weight of a person may be increased by feeding thyroid extract; the action of thyroid extract is quantitative and

it will increase the metabolic rate in a thin person as well as in a fat person.

The same may be said of the pituitary. There is in hypopituitrism or Frohlich's disease a tendency to lay on fat, but we know very little about the function of the pituitary. Most of the cases of diseases of the gland have been due to tumors which may involve surrounding structures and therefore the symptoms that follow or accompany such conditions may not be due exclusively to pituitary upsets.

I cannot, as you see, go quite as far as my friend and former pupil, Dr. Caveness, in assuming that obesity is an endocrine disturbance. As a teacher I feel that I should hold these young men down to established facts. If one lets his imagination run riot he can explain many of these medical puzzles. One of the doctors reported that he had relieved for the moment at any rate, a decompensated heart by the use of thyroid extract. This, I imagine, will shock any physiologist. And yet one can, by letting his imagination go unrestrained, think of a possible explanation. A solution of glucose intravenously is probably one of the best immediate remedies we have for shock. Thyroxin is a powerful metabolic stimulant. May the thyroid extract in the case mentioned not have acted to improve the nutrition of the heart and accomplished something in this way? Speculations are always interesting, but speculations involving the ductless glands are always difficult to prove.

Dr. Caveness, closing the discussion: One of the outstanding features in endocrine disturbances, and particularly in the types of endocrine disorders which produce obesity, is the tendency to have more than one gland or set of glands out of order at the same time. There is a striking correlation of action between these glands. There is a tendency for one gland to produce an over-secretion to supplement the under-secretion of another gland. This probably can explain the normal or slightly elevated metabolic rates in so many cases of obesity. In these cases the disturbance may be due to a deficiency of secretion of the thyroid gland. A low metabolic rate would be expected, but an over-acting pituitary gland in its effort to compensate for the lowered thyroid function raises the metabolic rate. On account of controversy over the point, the value of carbohydrate tolerance tests in determining the pituitary function has been omitted intentionally.

A PRELIMINARY REPORT ON A TUBERCULOSIS STUDY OF 7,005 SCHOOL CHILDREN

By P. P. McCain, M.D., S. E. Lee, M.D., and P. A. Yoder, M.D.

During the present school session the Extension Department of the North Carolina Sanatorium, in cooperation with the local health departments and school authorities, has been conducting a study of tuberculosis among the school children in the primary and grammar grades in various parts of the state.

For lack of time and personnel it has been necessary for us to limit the study to those children most likely to be infected with tuberculosis, and we also included in this study only those children whose parents

signed written permission for the examination. The fact that so few parents have any objection to the study being made on their children is one of the most encouraging evidences of the progress of public health work in our state.

The three groups of children selected as being most likely tuberculous are:

1. All known contacts.
2. All ten per cent or more underweight.
3. All with suspicious symptoms whether underweight or not.

After the selection of the children for the study the first step is the giving of the tuberculin test to each child. On all those showing a positive test the following procedures are taken:

1. A history of exposure, including family history.
2. A history of past illnesses.
3. A history of present symptoms and habits.
4. A general physical examination including the chest.
5. An X-ray examination of the chest.

After the X-ray films are read and after all the information concerning the patient is reviewed the children are classified as not tuberculous, suspicious or tuberculous. The tuberculous are further classified as clinical or latent. For any abnormal conditions which may be found the children are referred to their family physicians for treatment and advice.

The form of tuberculosis usually found in school children is the tracheo-bronchial type or, as it is frequently called, hilum tuberculosis. Lack of time will not permit a detailed discussion of its pathology. Suffice it to say that tracheo-bronchial tuberculosis represents a primary infection in the lungs, the primary focus usually being a very small lesion situated somewhere in the periphery of the lung with a secondary involvement through the lymph channels of the regional pulmonary and tracheo-bronchial lymph nodes. The primary focus is usually so small that it produces no abnormal physical signs and it is frequently not even seen in the X-ray films.

The parenchymatous lesion, the usual pulmonary form of tuberculosis as found in adults, is very rarely seen in children. In the 734 positive tuberculin test cases out of the 3,103 cases in which our studies have already been completed we have found only three cases which we are sure are pulmonary tuberculosis. Chadwick found only forty-five cases of pulmonary tuberculosis in thirty thousand school children tuberculin tested and examined in Massachusetts.

More frequently tuberculous adenitis, especially cervical adenitis, is found and very rarely some of the other forms of tuberculosis.

The accurate diagnosis of childhood tuberculosis requires a careful weighing and evaluation of all possible data. The first essential for a positive diagnosis is a positive tuberculin test. Except in very far advanced and in acute or miliary tuberculosis, wherein the resistance is overcome and the individual has no power to react, either the von Pirquet or the slightly more sensitive Mantoux or intracutaneous tuberculin test will be positive whenever there is any tuberculous infection present. In the absence of a positive tuberculin test a definite diagnosis of tubercu-

losis in a child is rarely ever justified. A negative test rules out tuberculosis.

A positive tuberculin test proves the presence of a tuberculous infection—that somewhere in the body there are live tubercle bacilli—but does not prove that the child has tuberculosis. Only a small percentage of positive reactors will be found to have clinical tuberculosis. Of 7,005 school children given the tuberculin test so far this year 1,702 or 24.1% showed a positive reaction. Studies have been completed on only 3,103 of these, and of this number sixty-eight or 2.2% were diagnosed as clinically tuberculous.*

Reports on the percentage of positive tuberculin reactions in various parts of this and other countries vary very greatly, many of them being seventy-five per cent or more. The report of the State Board of Health of Massachusetts by Chadwick and others on thirty thousand school children from all walks of life is the most comprehensive on record. He found that 28.5 per cent showed a positive test.

The giving of the tuberculin test is very simple and it can easily be interpreted by any physician. The Extension Department of the Sanatorium furnishes the tuberculin for the test in capillary tubes with full directions for its use and interpretation free, and we are anxious for all the physicians in North Carolina to avail themselves of the great help to be derived from its use. Every child who has suspicious symptoms of tuberculosis should be given the test. If it is negative tuberculosis can be ruled out. If it is positive the child should be given the benefit of all available diagnostic procedures to determine whether or not clinical tuberculosis is present. We repeat that the test is easily given, that it is easily interpreted and the tuberculin can be had free.

The degree of the reaction in positive test cases is also of some value. This is especially true of the intracutaneous test where a definite quantity of tuberculin is injected. The reactions are usually read as one, two, three, or four plus. The more vigorous the reaction the more likely is the child to have clinical tuberculosis.

There are no characteristic symptoms of childhood tuberculosis. The following are those more frequently found: undernourishment, an actual loss of weight being rather unusual, but a failure to grow and gain weight being very common; fatigue, or tiring easily; a lack of energy, the child showing a tendency to prefer sedentary rather than forms of amusement requiring much exertion; a tendency to nervousness or to be peevish and irritable; a delayed recovery from some other disease such as measles, whooping cough or influenza, without any other complications to explain the delay. Fever may or may not be present and it may be of the P. M. type or it may be irregular or continuous. The normal variations of temperature in childhood are so varied however, that the presence of fever is of much less diagnostic significance than in adults. Juvenile tuberculosis is usually not accompanied with such symptoms as cough, tendency to frequent colds or hoarseness. Pleurisy and hemoptysis very rarely occur and the latter when present indicates, of course, the adult or pulmonary form of the disease.

*Of the 3,103 cases completed, 734 or 23.6 per cent gave a positive test. Of these 734 positive test cases 9.3 per cent or sixty-eight were clinically tuberculous.

As stated above, the symptoms found in childhood tuberculosis are not pathognomonic, but may be caused by a number of other conditions such as diseased tonsils and adenoids, sinusitis, hookworm disease, pyelitis, cardiac disease, et cetera. It is also true that not infrequently cases of tracheo-bronchial tuberculosis demonstrable by the X-ray have no symptoms causing the patient to feel sick.

To an even greater extent is it true that there are no characteristic physical signs to be found in the chest in childhood tuberculosis. Paravertebral dullness, harsh breath sounds, increased whispered voice sounds and scattered rales are found almost as frequently among underweight children who give a negative tuberculin test as among those who are found to have definite tracheo-bronchial tuberculosis. Such physical signs as anemic mucous membranes, pale skin, poorly developed and flabby muscles are more frequently found in the tuberculous child, though the appearance of ruddy health does not exclude tuberculosis.

The physical examination and laboratory examinations in the study of childhood tuberculosis are of more real value in the discovery of other abnormal conditions which might explain the symptoms than in demonstrating the presence of a tuberculous lesion. The discovery of diseased tonsils and otitis media, heart disease, or the discovery of pus in the urine, intestinal parasites or their ova in the stool, or of malarial parasites in the blood should indicates the need of caution before diagnosing a child as tuberculous. If there are no such defects, or if the suspicious symptoms persist after such defects are corrected, it is much more likely that the case is one of tracheo-bronchial tuberculosis.

Because there are no characteristic physical signs and because its most frequent symptoms are common to a number of other conditions, because tubercle bacilli are rarely demonstrable and because of its characteristic pathology, the X-ray is of greater importance in making an accurate diagnosis of childhood tuberculosis than in the usual pulmonary type of the disease. The characteristic densities of tracheo-bronchial tuberculosis are a small focus situated at the periphery rarely larger and often smaller than a pea, and nodules due to the involvement of the regional pulmonary and tracheo-bronchial glands which drain the area of this primary focus. The X-ray also has its definite limitations. Many of the lesions are not sufficiently dense to cast a shadow on the film and this is especially true of the early lesion. Within the hilum region also the lesions are surrounded by so many other structures which cast heavy shadows, the spine, sternum, heart and large blood vessels, that they are frequently obscured. This is especially true when only a single antero-posterior film is taken. This difficulty is overcome in large part if oblique as well as antero-posterior films are made. Stereoscopic antero-posterior films are really essential for a satisfactory X-ray study of childhood tuberculosis. In the school clinic we were only able to secure a single antero-posterior and an oblique film, the necessary equipment for stereoscopic films not being available except in Greensboro, where we were exceedingly fortunate to get both stereoscopic and oblique films made by Dr. Joseph Shohan. Since Dr. Shohan is to present his findings in the next paper to this section I will not discuss this phase of the subject further.

It is by the careful weighing of the evidences obtained by all the various aids that an accurate diagnosis of tracheo-bronchial tuberculosis can be made. The general practitioner who does not have access to an X-ray is certainly justified in making a strongly probable or tentative diagnosis of tuberculosis in a child who has a positive tuberculin test and suspicious symptoms without any other discoverable condition to explain such symptoms. If he also obtains a history of close exposure and if the tuberculin test is strongly positive the evidence is practically conclusive.

Fortunately the prognosis in the tracheo-bronchial form of childhood tuberculosis is good under proper treatment. The pulmonary form of the disease however, which frequently follows in the wake of the tracheo-bronchial form when not properly treated, offers a very poor prognosis in children.

The first and probably the most important step in the treatment of childhood tuberculosis is to prevent further infection of the child by locating the source of the infection, usually some member of the family or servant in the home, and to make sure that the child will not continue to get massive doses of tubercle bacilli. If this is done and if in addition to the usual rest, hygienic and dietetic treatment of adults, heliotherapy or the quartz light treatment is employed, childhood tuberculosis can usually be cured. At the North Carolina Sanatorium we now have a modern building for children where special attention is given their treatment.

The value of the school tuberculosis clinic consists not alone in the discovery of the cases of clinical tuberculosis in the school at a stage in which they can be cured and before they become infectious. Many adult cases of tuberculosis who are throwing off bacilli in the homes from which the positive tuberculin test cases come are discovered; the positive tuberculin test proves to them that they are infecting their children, and it is easier to get them to practice the necessary precautions. The demonstration of the fact that one out of four children who are materially underweight has tuberculous infection furnishes a warning to both parents and teachers to safeguard the health of the child and arouses interest in the whole subject of health and disease prevention. A reweighing of the children three months after the clinic in one community showed that they had made an average gain of five and one-half pounds.

The hearty cooperation of the local health and school authorities has been most encouraging to us. The enthusiastic interest in the health of their pupils of all school superintendents, principals and teachers, with whom we have been brought in contact through the clinics, is to us a most encouraging evidence of the splendid progress in health work which is being made throughout our State.

A ROENTGEN STUDY OF CHILDHOOD TUBERCULOSIS

By Jos. Shohan, M.D., Greensboro.

In order better to appreciate the roentgen evidence in childhood tuberculosis, it will not be unprofitable to review briefly a few fundamental considerations of roentgenology, particularly of the chest, as well

as make a short resume of the tissue reactions generated by tuberculosis.

Every roentgenogram is, in a limited sense, a biopsy, a living post mortem, so to say. It depicts, in its several contrasting shadows, all, or most all, of the tissues, that happen to lie in the path of the rays, whether normal or pathological. In order to be able to recognize and differentiate the shadows of pathological structures, one must have a clear and comprehensive idea of the shadows of the normal.

It is a mere truism to state that a knowledge of the normal is the ground-work of the roentgenologist, even as it is of the pathologist.

Due to a number of physical conditions, into which I cannot enter here, the study of the normal in the roentgenogram is not so favorably conditioned as the pathologist finds it in the autopsy room. Yet, if we are to make any headway in roentgenology, we must hold fast to some normal standard.

Most of the chest tissues depicted in the chest image, or pulmogram, are definite and unmistakable. Others are less so. The shadows of ribs, heart, hili and blood vessels are fairly constant and readily discerned. Within a reasonable range, the shadows of hili and blood vessels vary in density and size. Unless the deviation is marked, it is usually without significance.

Most confusing are shadows of blood vessels and bronchial ramifications that happen to lie axially, or nearly so, in the path of the central ray. Under such circumstances, their shadows will equal in density those of calcified lymph nodes, or calcified paranchymal foci, and may deceive even the trained eye. I shall have something to say about their differentiation later.

And now for a very brief consideration of the tissue changes of tuberculosis in lung and lymph node. This will help to a clearer conception of the shadows they may produce.

When a child is exposed to tubercle bacilli, these are fairly certain ultimately to invade the lung. The fate of the invaders as well as the host will depend largely upon the number of the invading bacilli and to some extent upon their virulence, opposed by the immunity of the host. At the risk of being trite, I wish to emphasize the well known fact that infection is, to a great extent, a quantitative reaction.

If the bacilli are too numerous to be overcome by the defenses of the child, they will produce a definite, specific reaction, a proliferative reaction, of which the tubercle is the result. Following this, some regional lymph nodes will be involved. Now we have the so-called primary complex of Ranke and Ghon, that is, a focal parenchymal lesion with infected lymph nodes.

Rarely, the number of bacilli are disproportionately large. They will then infect a goodly portion of the lung, and produce the frequently fatal tubercular broncho-pneumonia. A roentgenogram made at this stage will show the broncho-pneumonic process, without indicating the nature of the invading organism.

In the vast majority of cases, the infection is checked by the defensive forces of the child, and confined to a small encapsulated area of the parenchyma. This small hyperplastic focal lesion is not dense enough to cast a distinctive shadow, and we cannot hope ever to recognize it in the

pulmogram. The infection in the lymph nodes is frequently more extensive than in the parenchyma. They may conceivably swell the hilum considerably, and a hilum shadow may probably be produced larger than ordinarily seen. But swollen hili may well result from other infections. Their respective shadows in the pulmogram would not differ. At this stage of the disease, roentgenology offers very little evidence.

The primary infection, however, does not stop at hyperplasia. After a child's immunity forces have walled off the focal lesion and the infected lymph nodes, caseation soon supervenes. We are now approaching a phase in which the roentgenogram can at times be of considerable help. The conditions are not always favorable, though, for the reproduction of caseous foci in the pulmogram.

As is well known, the primary focal lesion is most often located in the periphery of the lung, subpleural, thus favoring the visualization of a caseous focus. Lymph nodes are less favorably situated for this purpose. Opie and McPhedran are of the opinion that caseous tissues do not produce distinctive shadows. On the other hand Graff and Kupferle have on occasions diagnosed caseous nodes on the pulmogram, and verified their interpretations by post mortem.

I have repeatedly observed certain shadows in and about the hilum, that seemed to be of considerably less than bone density, and I interpreted them as caseous nodes.

When caseous parabronchial nodes form a fairly large cluster, they often jut out from the hilum contour, and may thus be recognized more readily, although not with absolute certainty. Other infections may conceivably produce similar shadows. In my series of cases, I have observed such hilar shadows on several occasions.

Were the possible Roentgen evidence of the pulmogram confined entirely or even to a great extent, to the shadows of caseous tissues, then roentgenology would, indeed, be in a bad way. As we well know, this is not the case, since caseation is most often only a passing phase in the evolution of tuberculosis.

In further response to the immunity forces of the child, calcium salts are deposited in these caseous lesions, the very thing the roentgenologist could most wish for.

Indeed, the vast majority of cases that make up our childhood tuberculosis problem do not stop at caseation but go to, at least, partial calcification.

The calcified portion of the tuberculous lesion, unlike the caseous, can hardly be missed on a fair pulmogram. It is important, however, to differentiate it from the troublesome blood vessels and bronchi bifurcations that produce similar shadows.

As I observed them, I often found the nodule less regular in outline, and, of course, it is not likely to be accompanied by a ring-shaped bronchus shadow. At times one can recognize the stippling of the small calcium deposit within the round shadow. I may be able to demonstrate such cases here on the screen. Furthermore, it is hardly conceivable that two or more blood vessels will lie axially in an identical relation to the central ray. Wherever we meet a cluster of these dense, round shadows, we may be fairly certain that we are not confronting blood vessels.

The size of the shadow, too, will often help to differentiate it. The blood vessels and the bronchi, as they ramify towards the periphery, continue to diminish in calibre. Even in the mid-zone of a child's lung, the vessels are fairly small, and considerably smaller as they approach the periphery.

Opie and McPhedran called attention to the fairly constant, evenly circular blood vessel shadow, 3 to 6mm. in diameter, found near the hilum, at the level of the fifth interspace posteriorily. This shadow, when present, may serve as a guide to the size of suspected blood vessels elsewhere.

Comparing the two stereograms will help at times to establish the identity of some questionable shadows. If any further doubt exists about a given shadow, a negative prepared with the patient in an oblique position will clear it up in most cases.

With a very careful, painstaking technique, very few of these dense shadows will leave one in doubt. Those not produced by blood vessels are calcified nodules, the result of practically one known pathological condition, tuberculosis. Non-tuberculous lesions do not produce these dense round shadows seen in and about the hilum on the pulmogram. The investigations of Guinon and Levesque, and of others, are quite conclusive on this point.

I have gone into some detail discussing the dense, round shadows as portrayed in the pulmogram of a young chest, for a very obvious and sufficient reason. These shadows are our main, if not our sole, source of information. I am aware that I am uttering somewhat heterodox doctrine. But if it is true that roentgenology is at best a living post mortem, then pathological facts must be our sole guide.

A vivid realization of these facts forces one to the conclusion that the best services of roentgenology in childhood tuberculosis is not during the early phases of the disease.

But if the roentgenogram cannot tell the whole story, it is sure, to the trained observer, to tell a goodly part of the story.

The actual size and number of the calcified shadows on the pulmogram, tell us, as nothing else will, of the severity of the invasion, of the efficiency of the defensive forces, in part at least, and of the struggle that is still going on. For these shadows are not mere dead witnesses of a struggle that is past. They sometimes contain viable bacilli supplying toxins to the blood, and are thus more than a mere potential source of danger.

One or two small calcified nodules in a pulmogram denote a mild infection, and probably good immunity. Several fairly large such shadows as surely indicate a more marked infection, with defenses less efficient. Numerous shadows in the pulmogram can have only one interpretation, a massive invasion, with immunity at the breaking point.

The pulmogram may thus serve as a key to a rational classification of childhood tuberculosis, constructed on a quantitative pathological basis, as reflected in the shadows of the calcified nodules.

From this point of view I analyzed and classified the cases now under discussion. As a result of the Public Health school survey of Greensboro, 305 children, both white and colored, were referred to me

for roentgen examination, after they had all reacted positively to the cutaneous tuberculin test. There were 171 white children, from the primary schools only. The 134 colored children included primary and high school grades. Of most of them I made exposures in two positions, a stereogram in the frontal, and one flat negative in the oblique.

I will digress for a moment, to emphasize the importance of the oblique position. A number of cases in which I could not see the least indication of diaphragmatic adhesions on the frontal view showed these plainly on the oblique. As for mediastinal shadows they are at times only visualized on the oblique view.

Notwithstanding that they were all Von Pirquet positive cases a large number of them, 126 or forty-one per cent, did not reveal definite nodular shadows. I classed all such pulmograms as negative, that is roentgenologically negative.

The positive cases I divided, according to the quantity of their nodular shadows, into minimal, moderate, and extensive.

In the minimals I placed those pulmograms in which I could find evidence of one calcified nodule, with or without a primary focus. They made up thirty-three per cent of the entire group.

The moderate comprised those on which were several calcified nodes, with or without evidence of a primary focus; also those with definite pleuritic adhesions, or suggestive evidence of apical involvement, even though they showed only a minimum of calcified shadows. There were sixty-two of these, or twenty per cent.

To the extensive, I assigned those that showed massive shadows, in one hemithorax, or a moderate amount of shadows in both, or moderate plus pleuritic or apical evidence. In all, there were 16 in this group, or five per cent of the whole.

I use the term minimal, moderate, and extensive, not in the clinical sense of less sick or more sick, but purely in the roentgenological, interpretating the quantity of calcified shadows seen on each pulmogram.

A pulmogram that contains only one calcified focal lesion, or lymph node, that is, a minimal case, is surely indicative of a minimal infection, with maximum immunity forces. The small, recognizable nodule may contain, however, a number of viable microorganisms, sufficient to produce a systemic reaction under certain unfavorable conditions. If this particular child's immunity factors are above par today, it is well able to counteract and neutralize the effects of its small lesion, and the process is not active. Tomorrow, the defenses of the child may be broken down by some intercurrent disease, and the inactive case of yesterday becomes active today. There will hardly be any change in the appearance of the child's pulmogram, for this does not register immunobiological disturbances, at least it does not do so directly, but inferentially, at times.

A pulmogram of the moderate group will show several definite, dense shadows of calcified lymph nodes, and possibly in addition a primary focus, or a tale-telling, distorted and angular diaphragm, or perhaps an ominous looking apical field with heavy striae, not quite linear, extending to the very top. If it is all in one hemithorax, I would still be inclined to class it with the moderate.

Such a pulmogram tells its unmistakable tale of a good-sized infection, with immunity forces none too potent. Or, if the primary invasion was small, so much the worse is the immunity of the child and its prospects for the future. Whichever of these it may be is impossible to tell from the shadows in the pulmogram. The clinician may be able to determine this, for he has at his disposal other means of inquiry and other sources of information besides that of roentgenology.

When we look at one of the pulmograms that I classed as extensive, we see, indeed, an extensive process. The cases vary in degree, of course. But they all show bilateral lesions, and most of them basal adhesions. However, even the children in this group may not all be manifestly sick.

And now a word about the negative, that is, roentgenologically negative, but tuberculin positive cases. These may be variously interpreted. In some of them the tuberculous lesion may not have been pulmonary at all. Quite a number of them were charted as having tender cervical glands. In some the lesion may have been too small to cast a definite shadow, or it may have healed completely. Another interpretation, however, can not be excluded, namely, that the lesion has not yet become calcified, that we are facing a case with an early infection, and have no roentgen means of knowing how extensive the process is. It is important to have this possibility in mind when a positive tuberculin child gives a negative pulmogram. Under such circumstances, I would suggest that the child be re-examined every two or three months, if the clinical evidence warrants it.

I am cognizant of the fact that the quantitative value of a tuberculin test is doubtful. Not all observers are ready to concede a quantitative value even to the Mantoux test, much less so to the cutaneous test, which was the one applied in the cases I am discussing. Nevertheless, I found it interesting, to say the least, to compare the quantitative roentgen evidence of the pulmogram, with the quantitative reaction of the tuberculin test.

The chart that I plotted out tells its own story.

The highest per cent of plus reaction was given by the negative group, in fact out of all proportion to the other groups, that is 83%. The minimal group had the next highest per cent of one plus reactions, 61%, or 22% less.

While the negative group shows only seventeen per cent of the two plus reactions, the minimal group goes up to thirty-six per cent, more than twice as many. The moderate group climbs up still higher, to forty-two per cent. The extensive group comes down a few points, but remains higher than the minimal. The three plus reaction shows a steady ascent of the curve. None at all in the negative group, only one per cent in the minimil, eleven per cent in the moderate, and thirteen per cent in the extensive.

I plotted a similar curve of the exposure incidence in the four groups. We see the constant climb from ten per cent to fifty per cent, from the minimal to the extensive.

This concomitant quantitative relation is rather striking, though perhaps not conclusive.

Like the tuberculin test, and for that matter, like every other sign, symptom, or method applied in medical diagnosis, roentgenology has its limitations, but it certainly has its definite indications and value.

Unlike the tuberculin test, or any other known method today, it literally gives one an inside view of the child's lungs. It enables one to see the location of the infection, and gives a graphic account of its extent.

This quantitative evidence, though by no means all sufficient, is clearly of the highest value in the diagnosis of childhood tuberculosis.

THE SCHOOL TUBERCULOSIS CLINIC FROM THE STANDPOINT OF THE HEALTH OFFICER

By C. C. Hudson, M.D., City Health Officer, Greensboro.

Beginning the latter part of November, 1926, representatives of the State Health Department, working with the City Health Department of Greensboro, undertook the study of our school children to determine the prevalence of tuberculosis infection and how many school children needed treatment other than they were receiving at the present time. The clinic was conducted jointly, the State Sanatorium supplied a clinician and read the X-ray plates, and the City Health Department made arrangements for the examination of the children through nurses and assisted during examinations and financed the X-ray work which were cared for by Dr. Shohan, a local X-ray expert.

The clinic was conducted in an excellent manner. The clinician supplied by the State Sanatorium did his work thoroughly and in a very quiet manner, and without a complaint. He simply became one of the force during his stay with us and showed that he was as ready to work as any of us. We received good cooperation from the physicians of Greensboro, all showing much interest in the work, and so far as I know no criticism. The physicians were of great assistance to us in advising their patients to be examined.

The clinic afforded an excellent opportunity for centering the attention of our people upon the importance of tuberculosis in childhood. It has been of especial importance in impressing upon the public the importance of having children who are not developing as they should given a careful physical examination. We are having better cooperation from the parents in the correction of defects, such as underweight, diseased tonsils and other things which are hindering the development of our children. While we have limited our newspaper publicity, especially that more likely to alarm the public, we have been able to get in much educational work of a general nature. The talks and personal interviews with the clinician, the nurses and physicians of the state and city, have been of very great assistance.

The study has given us new light on certain phases of our tuberculosis work. In deciding which children should be examined, Dr. McCain thought it would be well to examine:

First—All white children who were as much as ten per cent underweight for their height.

Second—All negro children who were below normal weight.

Third—All children who gave history of exposure to tuberculosis without reference to their condition.

Fourth—Any child who showed symptoms of tuberculosis, such as chronic cough, lassitude, over-fatigue, etc.

1,462 children were examined of which 332 gave a positive test, thus indicating an infective rate of 22.8 per cent of the number examined. The white rate was 20.9 per cent, the colored 25.7 per cent. The infection rate of 22.8 is much higher than we would probably find if we examined all the children in school as we had all our children who had been exposed to tuberculosis in this group and also all the underweights and those showing symptoms of tuberculosis.

It is interesting to note that the percentage of reactors increases in the higher grades of school. The following table shows the number of children tested by grades and the percentage of reactors which were found:

REACTIONS BY GRADES

Grade	*Tested*	*Positive*	*Per Cent*
First grade	286	44	15
Second grade	216	38	17.6
Third grade	181	37	20.4
Fourth grade	250	65	26.0
Fifth grade	184	46	25.0
Sixth grade	114	24	21.0
Seventh grade	116	38	32.7
Eighth grade	14	4	28.6

In connection with the examinations it is very interesting to note that 85.7 per cent of those exposed to tuberculosis gave a positive test. This shows that the test is undoubtedly very reliable and also explains, when taken in connection with the weight of children, the reason why there is a tendency for children who have lived in houses with tuberculosis to develop the disease later in life.

EXPOSED TO TUBERCULOSIS

a—Reaction

Total	84	
Positive	72	
Negative	12	
Per cent positive		85.7

b—Weight

	Number	*Per cent*
Normal	13	15.5
0—9% underweight	27	32.1
10% or more underweight	44	52.4

Most of the reactions read were of the one plus type. We would judge from the type of reaction in our positive cases that perhaps there was some error in reading the reaction among the colored children and perhaps more of our reactions were of the two plus variety than the table would indicate.

TYPE OF REACTION

	Number	*Per cent*
One plus	219	68.0
Two plus	89	27.7
Three plus	13	4.0
Four plus	1	0.3

TYPE OF REACTION OF POSITIVE CASES

	White	*Colored*	*Total*	*Per cent*
One plus	4	11	15	32.6
Two plus	14	10	24	52.2
Three plus	4	2	6	13.0
Four plus	0	1	1	2.2

A study of reactors by weight groups was made, but as we have not been able to make a complete check on this work we think some error was made in the report regarding the percentage of reactors in some of the weight groups. However the figures which we have would certainly indicate that the more a child is underweight the more is it likely to show tuberculous infection.

PERCENTAGE FACTORS BY WEIGHT GROUPS

	Number Tested	*Number Reactors*	*Per cent Positive*
Normal	275	33	12.0
0—9 underweight	263	71	27.0
10—14 underweight	496	95	19.2
15—19 underweight	179	40	22.4
20—25 underweight	65	21	32.3
Over 25 underweight	22	8	36.4

X-ray examinations were made of 311 of the 333 children which gave positive reactions: 176 white; 135 negro. These were classified by Dr. McCain and Dr. Shohan as follows:

White

Negative	109
Suspicious	45
Positive	22
Needing Sanatorium care	11
Possibly needing Sanatorium care	7
Sanatorium care not needed	4

Colored

Negative	77
Suspicious	34
Positive	24
Needing Sanatorium care	12
Possibly needing Sanatorium care	3
Sanatorium care not needed	9

In connection with the positive cases it is especially interesting to note that the girls show a much higher positive rate than the boys, as indicated by the following table:

POSITIVE CASES

Boys		Girls	
White	7	White	14
Colored	8	Colored	16
Total	15	Total	30

All ages were represented in the positive case group, but they seemed to center around twelve, thirteen and fourteen years:

AGE OF POSITIVE CASES

6 years	2
7 years	2
8 years	5
9 years	7
10 years	3
11 years	3
12 years	11
13 years	4
14 years	5
15 years	1
16 years	1
18 years	1

Not all those classed as positive cases were underweight as we would expect them to be. One of the cases which was classed as a positive case has been given some additional rest and extra diet and has shown a very rapid gain in weight and general physical improvement, having already come up to a normal weight line.

	Needing Sanatorium care		*Possibly needing Sanatorium care*		*Not needing Sanatorium care*		
Weight	*White*	*Col.*	*White*	*Col.*	*White*	*Col.*	*Total*
Normal	0	1	1	0	1	3	6
0—9 underweight	0	5	1	1	1	2	10
10—14 underweight	4	3	3	1	1	1	13
15—19 underweight	4	1	1	0	1	1	8
20—24 underweight	0	1	0	0	0	0	1
25% or more	1	0	0	0	0	0	1

As you have undoubtedly noticed, the study has revealed several problems:

1. Sanatorium care for those needing it. Some of these will undoubtedly not need to remain at the Sanatorium very long while others would need longer care.

The State Sanatorium now has a children's building where white cases can receive attention and the colored department can also care for the negro children, unless it has filled recently. In Guilford county we hope in the near future to have facilities for caring for our white children who have active trouble. After the children return from the Sanatorium it will be necessary to keep them under observation for years if best results are to be obtained.

2. Additional safeguards should be thrown around those positive cases not needing Sanatorium care and also all cases classed as suspicious. These must be studied again in the near future.

3. The remainder of our children showing a positive reaction must have additional protection so that they will not develop into active cases.

4. The study has shown us that while our infection rate is apparently much lower than we formerly thought it would be, we still have many people exposed to tubercular infection and a better safeguard should be thrown around our tubercular cases, especially around the children who live in houses with cases. Of the 22 positive cases recommended for Sanatorium care fourteen gave a history of having been closely exposed to the disease.

5. Not only should these children who have been infected with the tuberculosis germ be brought up to an average gain in weight for their height, but also all children who are underweight should receive attention. We have various measures for doing this, such as notices to parents in regard to the child's weight, visits from our nurses to instruct the parents in regard to having the children examined by the family physician, which works in many cases. Instructive literature is also of assistance to the nurses. Open-air rooms in school buildings are being used in many places for children who are underweight. Hot lunches are provided in most of our schools, and are undoubtedly of assistance. Nutrition classes for children who are underweight are of decided assistance in correcting the underweight condition and teaching mothers how to care for their children. In a number of places the children who are underweight, especially those living in homes of tubercular patients, are segregated in one school, which would seem to be the ideal method of caring for these children, as they could receive, in addition to the instruction, extra nourishment, sun baths or other therapeutic measures advised by the physician, could have ideal arrangements for rest periods and would not be exposed to the temptation of over-exerting themselves which comes to children who come in contact with healthy children.

DISCUSSION

Dr. C. W. Armstrong, County and City Health Officer, Salisbury: When you consider the fact that one child in every three in North Carolina is undernourished and underweight and that every one of these underweight children is a potential tuberculosis case and that the records show that a large number in later life develop tuberculosis, you realize that Dr. McCain has thrown down a challenge to the medical profession of the state. There is a tendency for people who have undernourished children to consider them as normal and not in a pathological condition. It is unfortunate that there is this tendency not to attach the importance to this condition which it deserves. For that reason underweight is not receiving the attention it should. A parent comes to the family physician or health officer and does not get the consideration to which the child is entitled. The fight against tuberculosis in this state is certainly a bright spot in North Carolina history, and too much praise can not be given to those who have that fight in charge. We have confined ourselves practically to the hospitalization of the tuberculosis case. That is fine so far as it goes, but we shall never conquer tuberculosis in North Carolina until we bring up a population that is immune to tuberculosis because it has

sufficient resistance to overcome the infection, and until you bring these underweight children up to normal you will never do it. I believe in a generation or so, if you can bring up these underweight children and keep them there, the fight against tuberculosis will be won. I believe the whole health problem of a child can be solved if you bring him up to normal weight and keep him there. Given a child with no defect such as tonsils or adenoids, no reason why it should not gain, it is very easy to bring that child up to normal weight. It was very significant that in my town in one school where most of the children came from good homes there was more undernourishment than in the school attended by most of the cotton mill children. Undernourishment is not due to the fact that children do not get enough to eat, as a rule, but to the fact that the parents allow the child to dictate what it will eat. The preachers tell you to look after the child's moral side so that it grows up to do the things it should, but you hear very little about teaching the child to do the things that are physically right. I think it is more important to bring up children to be physically fit than morally fit, because in most cases the children not morally right are physically unfit.

Dr. J. L. Spruill, Superintendent Guilford County Tuberculosis Sanatorium, Jamestown: I don't think we have ever had a more interesting discussion or papers of any more value since I have been a member of the State Medical Society than those we have just heard. Some of the men sitting here want to listen to some of the other papers, and I feel that we have taken up all the time we ought to take up on this subject. I think, however, there is nothing of more vital interest to North Carolina than this subject of tuberculosis. I should like to see a special section on this disease.

Dr. N. C. Daniel, Oxford: I am very much interested in the subject of undernourished children and tuberculosis in children, on account of being physician to one of the largest orphanages in the state. I investigated last year the number of children applying for admission to the Oxford Orphanage who had been exposed to tuberculosis on account of living in the house with some one ill with that disease. You will be surprised to learn that twenty-five per cent of the children applying for admittance had been so exposed. When I first took over the work at that institution I asked the board of trustees to let me object to the admission of children who had been exposed to tuberculosis. Through a field worker we found out these facts. They were so alarming that I wrote to Dr. Rankin, then secretary of the State Board of Health, and to Dr. McCain. They both became very much interested in it, and I think the physicians of North Carolina as a whole should become interested in this one thing—that so many of the children applying for admission to the orphanages have been exposed to tuberculosis. Some way should be devised to handle the problem, because it is not proper that these children should be brought into the orphanages to expose children who have not heretofore been exposed. Something should be done to care for these children, though I do not know what. Possibly we might appeal to the Duke Foundation to care for them.

THE SIGNS AND SYMPTOMS OF GALL-BLADDER DISEASE: ANALYSES OF A HUNDRED CASES

By Claiborne T. Smith, M.D., Rocky Mount, N. C.

"A woman, fair, fat, forty, belching gas, gall stones." This is an aphorism based on statistics, or if that term is obnoxious, the experience of the head of a large surgical clinic, where common surgical conditions are seen in large numbers, and the appearance and complaints of certain patients with a particular disease are so noticeable as to be considered typical. This Deaverism is well known. The purpose of this paper is to see how well it conforms with the analyses of a series of cases under my own observation, and what other signs and symptoms are of importance according to the frequency of their occurrence. The records of known cases of gall-bladder disease, unmistakably proven at operation, were analyzed.

Therefore this paper is based on the histories, examinations, and post-operative findings of one hundred patients with gall-bladder disease; studied before operation by the medical service of Park View Hospital during the past seven and a half years of my service there. The cases were not selected, but taken in sequence, and an effort was made to correlate all the known (to us) symptoms, physical, and laboratory findings in their order of frequency.

INCIDENCE

The age at which these patients applied for operation varied from the youngest at 16 to the oldest at 77 years. The curve of the age of incidence rose sharply from within the third decade to reach its peak in the fifth decade, and rapidly descended to the eighth. Before coming to operation the patients gave the histories of some of the symptoms of gall-bladder disturbance for the duration of one week to twenty-five years. By subtracting the duration of these complaints, the incidence of the age of onset of symptoms was determined. The curve here rose more rapidly in the third decade, ascended a little higher in the fourth and gradually came down to the sixth. In other words, a greater number applied for operation between the ages of forty and fifty; as equally great a number dated the onset of their symptoms as occurring between the ages of thirty and forty, and a slightly smaller number between twenty and thirty.

The incidence of the disease in males was only 18, in females 82, a ratio greater than 1:4. As the occurrence of gall-bladder disease is quite common in child-bearing women, which will be shown later, the explanation would seem to lie there; therefore, the birth rate in any particular community would influence this ratio.

As regards race or color, seven of the hundred were colored, all women. Five of these had been recorded as mulatto, and I can't recall that the other two were full-blooded negroes. These seven cases are from approximately 4,000 of both sexes admitted to the hospital for all conditions. This bears out the observations of several Southern surgeons and

certain German doctors in Africa, that the occurrence of gall-bladder disease is rare in the colored race.

HISTORY: ETIOLOGY

Of the eighty-two women who had gall-bladder disease, 71 had borne children. This is happening too frequently to be considered coincidental; therefore, pregnancy, with its accompanying increase of cholesterol in the blood must be considered an etiological factor in the disease. Of the remaining twenty-nine patients who had not borne children the history of sepsis or portal disease could be obtained in twenty-one.

The history of a pain located in the epigastrium or gall-bladder region was given by eighty-six of these patients. The pain was referred to the right scapula in forty-seven instances, along the right lower costal margin in twenty-four. The less frequent sites for reference of pain were as follows: both scapulae in thirteen, right and left lower costal margins in eleven, down the right arm in ten, the left scapula in five, the left costal margin and the right side of the neck in two each.

The history of gaseous indigestion was given in 79 instances. This symptom varied from a constant occurrence of gas after meals to attacks occurring at intervals of months. The history of nausea and vomiting was obtained in sixty. Many forced themselves to vomit because they said it gave them relief from the pain or discomfort. Hypodermics of morphine were required in sixty; of these forty-seven had stones. While sixty-two gave a history of good appetites they would usually add, "but what I eat gives me indigestion." A little less than two-thirds of the patients thought that certain foods, such as fats, raw fruits, and vegetables brought on their discomfort. A history of jaundice could be obtained in only about one-third of the cases. The ratio of occurrence between day and night was 2:3. The history of chills and fever was obtained in twelve, and masses were palpated in the gall-bladder region of this same twelve, and at operation empyema was found.

EXAMINATION

The observation that obesity goes with gall-bladder disease was borne out by three-fourths of this series. Of a more frequent occurrence was the finding of local tenderness in seventy-seven. Local rigidity was found in only thirty-nine due to the protected position of the gall-bladder up under the liver and lower thorax. Jaundice was found at examination in only eighteen instances.

LABORATORY FINDINGS

Utilizing the Graham-Cole technique, twenty-one of these patients were X-rayed and a diagnosis of gall-bladder disease made in all twenty-one. Of the hundred, only thirty-nine had a leukocytosis of 12,000 or over, only forty-eight a temperature of ninety-nine or over.

POST-OPERATIVE FINDINGS

Stones were found in seventy-six cases, cholecystitis without stones in twenty, empyema without stones in three, and one had cancer alone.

Carbuncle cured with 2 treatments of X-ray. Surgical and other measures had been used without success.

Four months after X-ray treatment.

SUMMARY

A child-bearing woman, not of the negro race, about the age of forty, a hearty eater, well nourished or too well nourished, seeking medical aid for the relief of gaseous indigestion of several years standing, complicated by colicky pains beginning in the upper right abdomen or epigastrium and referred to the right shoulder blade requiring hypodermics for the relief, can be considered gall-bladder disease until proven otherwise.

2. Jaundice, fever, leukocytosis, local tenderness, and rigidity help clinch the diagnosis, but any one or all of these findings may be absent.

3. Those requiring one or more hypodermics for relief of pain, usually have stones.

4. Chills and fever are usually associated with an inflammation of the capillary bile ducts, or a palpable mass, signifying empyema of the gall-bladder.

5. The X-ray with the Graham-Cole technique is an invaluable aid in confirming the diagnosis of gall-bladder disease.

6. The alliterative aphorism for which Deaver has been given credit, is very comprehensive; a fertile female, fair, fat, forty, flatulent—gall-bladder disease.

DISCUSSION

Dr. P. A. Yoder, Sanatorium: I should like to ask Dr. Smith what is his impression as to the appearance of gall-bladder disease following typhoid fever. What per centage of these cases that you studied had had typhoid fever?

Dr. Smith, closing the discussion: I do not remember the exact figures. I did not include typhoid fever alone but included also influenza, septic tonsils, anything in the portal system. About eighty per cent would give a history of some form of infection. But those who gave a history of some infection of that type usually gave a history of repeated pregnancies.

CONCERNING THE TREATMENT OF CARBUNCLES AND OTHER ACUTE INFLAMMATIONS WITH THE X-RAY

By Robert P. Noble, M.D., Raleigh.

The X-ray treatment of carbuncles is not new; it is neglected. Coyle, in a London journal, reported the treatment of carbuncles with the X-ray in 1906. The scarcity of X-ray equipment probably accounted for the very few cases treated in this manner from this time to 1916, when Dunham reported his cases treated with the X-ray. He said the outstanding effect was the relief of pain, which followed within two days after the treatment, and the gradual improvement of the patient to recovery.

In 1923, Lewis, of New York, reported his findings following his investigations with the treatment. He concludes by saying that X-ray is the treatment of choice for carbuncle.

In 1924 and again in 1925 Hodges, of Richmond, reported the successful treatment of large carbuncles with the X-ray. He reports no mortality from the twenty-six cases that he had treated.

So it has become generally accepted by roentgenologists that X-ray treatment for carbuncle is almost a specific.

Da Costa says that a carbuncle is really a boil with extensive infiltration of adjacent tissue. Boyd, in his "Surgical Pathology," a recent issue, says: "A boil is an example of an abscess located in a hair follicle or a sebaceous gland. The usual invader is the staphylococcus aureus. Should the infection penetrate to the deeper layers of the skin and subcutaneous fat, a carbuncle may be formed." The surgical treatment which has been followed and which is still mostly used is crucial incisions, extirpation of the entire mass, injections of carbolic acid, iodoform packs, and hot fomentations. As a rule all of these are used, accompanied by distressing pain and a lingering convalescence, with final marked disfigurement. There were many who did not survive the infection plus the treatment.

The X-ray treatment is painless. The patient is placed in as comfortable a position as possible, and the entire area and about two inches of the healthy adjacent tissue is exposed to the X-ray. I use a nine-inch spark gap, four milliamperes of current, ten-inch skin distance, and ten minutes exposure, filtered through one-half millimeter of copper. The treatment is repeated on the fourth day in all factors except the time, which is reduced one-half.

This generally does the work. Only occasionally is a third dose necessary. If taken early and no surgical interference has been done, the carbuncle heads as a single abscess; and the pus is easily evacuated through a small incision which leaves barely a scar. Small carbuncles often do not suppurate, and the inflammation gradually subsides.

If the carbuncle is well advanced and there are several openings and surgical interference has been practiced, X-ray treatment will greatly relieve the pain, aid the suppuration, and thereby greatly help the patient resist the infection.

I wish to say that while almost every community has its X-ray machine, all who take X-ray pictures are not competent to treat with the X-ray; and great care should be exercised, since the danger of X-ray burns is always present. There are, however, capable roentgenologists within reach of most physicians; and no one should be denied the benefit afforded by the treatment.

DISCUSSION

Dr. C. R. Young, Angier: I wish to say that I have had right much experience with carbuncles, and I expect hereafter to refer them to Dr. Noble, especially those of the lower lip. I had three cases, and they all died. I should like to know if that is the experience of other physicians. That is due probably to the blood supply, which sets up inflammation in the throat. All were invariably fatal until I tried the X-ray, with Dr. Noble. I think I have sent him two cases since then, and after a few exposures they all promptly healed. I do not think we can emphasize too forcibly the value of X-ray treatment. If you have a carbuncle on the under lip, especially, or on any other part of the body, try X-ray treatment. The old gentleman there was a patient of mine. I had a hard time persuading him to go up to Raleigh to take treatment, but after a

while he did. It was wonderful to see how quickly this sloughed out. Dr. Noble failed to say in his paper just why, but probably he will do that in closing. I do not think we have anything in medicine or surgery that offers the relief that is offered by X-ray for carbuncle. I think it is specific. I am especially interested, and if any of you gentlemen here have had any cases of carbuncle of the under lip that recovered without X-ray I should be glad to hear about them. If you have a case, I think the thing to do, instead of fooling with local applications or surgery, is to use X-ray treatment.

REPORT OF CASE OF LEG ULCER DEMONSTRATING THE VALUE OF PHYSIOTHERAPY

By James R. Alexander, M.D., Charlotte.

What is physiotherapy? Many physicians, I am sorry to say, think of it as a display of lights that have a psychological effect upon the mind of patients. I have chosen leg ulcer as the subject to show the fallacy of this error. The true definition of physiotherapy is "healing by nature," or "healing the natural way." Having an occasion a few weeks ago to consult different authorities on the use of physiotherapy in the treatment of leg ulcer, I was amazed to find how little was published on the subject, even by those who practice physiotherapy. A number mentioned the local use of ultra violet ray, the local use of which in my opinion is of the least value of all the modalities indicated.

How are we to find out the modalities indicated? Answer: If we know the pathological condition and the cause and if we have certain physical means that will produce certain physiological actions that will relieve both the cause and the pathological condition, we should be able to give scientific treatment and cure the disease.

It is natural for animal tissue to heal of its own volition. Why does leg ulcer not heal? Generally speaking, there are two reasons: defective capillary circulation and septic condition of the surrounding tissues. First, let us endeavor to get it in an aseptic condition, clean it by ordinary means; then let us use physio-chemical means called ionization.

What is ionization or ionic medication? Stated briefly, it consists in the introduction directly into the affected tissue of curative drugs. Remembering the fundamental law, that like charges of electricity repel and unlike charges attract, certain substances may be driven into the body by galvanic ionization. Thus, iodine, chlorine, salicylic acid, being negative ions are driven by the negative pole. Copper, zinc, mercury, lithium, quinin, cocain, magnesium, adrenalin, being positive, are driven by the positive pole.

Some drugs have been recognized for a long time as especially useful for certain diseases: salicylicates for rheumatic affections, lithium for gout, zinc solution for septic conditions. Therefore in leg ulcer, we will use a two per cent solution of zinc sulphate and apply it to the surrounding tissue by the aid of toweling or cotton, attaching the positive pole of the galvanic current to the wet pack and the negative pole should be placed near. The current should be as strong as the comfort of the patient will admit and should be given from twenty to thirty minutes.

The wet pack of the affected area should be kept saturated with a two per cent solution of zinc sulphate. Other ions, such as copper sulphate or magnesium sulphate, can be used in the same way but the zinc salt goes deeper and is applicable to any septic condition such as otorrhea, leucorrhea, and so forth. A large number of physicians are skeptical about ionization but if they will give it a practical test they will be convinced of its efficiency. Edison first suggested the idea as long ago as 1890.

The next physical agent we will use is dia-thermy. (Dia—through. Thermy—to heat). Attaching one pole above the knee, attaching the other to a pan with water in it, and putting the foot in the water, is a very convenient way to give dia-thermy to the leg. In these cases we give from 500 to 1,000 m. a. for thirty minutes, raising the leg temperature from 101 to 104 degrees. But I hear laboratory men say that a temperature of 104 degrees or 110 degrees does not affect streptococcus and staphylococcus or even the gonococcus. What value can there be in the heat? It does not change the chemistry of the blood. In answer I ask why is it that cold nitric acid does not dissolve the penny but hot nitric acid readily does. You have not changed the chemistry of the nitric acid by heating it, but you have made it more active. Why, Mr. Laboratory Man, do you involuntarily turn the hot water spigot to cleanse your soiled hands? Who ever heard of a laundress trying to cleanse the soiled linen by the use of a little cold water and using the same water over and over? No, she uses hot water and plenty of it and changes it frequently. I know this is a very homely illustration but if the laundress has enough judgment to use not only soap but plenty of hot water to cleanse the soiled linen, don't you think we might obtain a practical idea and add hot, active blood and plenty of it to our septic pathologies and throw in some alkali by aid of ionization to assist?

That is what dia-thermy does. The tissues resist the rapid current, thus causing heat which acts as a vaso-motor dialator giving the tissues more blood and the blood becoming more active on account of being heated. At the same time the effete matter is better eliminated. By the use of dia-thermy and ionization you get your entire leg in a healthy condition and it heals of its own volition or is in condition for skin-grafting. Phototherapy is quite an assistant in stimulating superficial circulation.

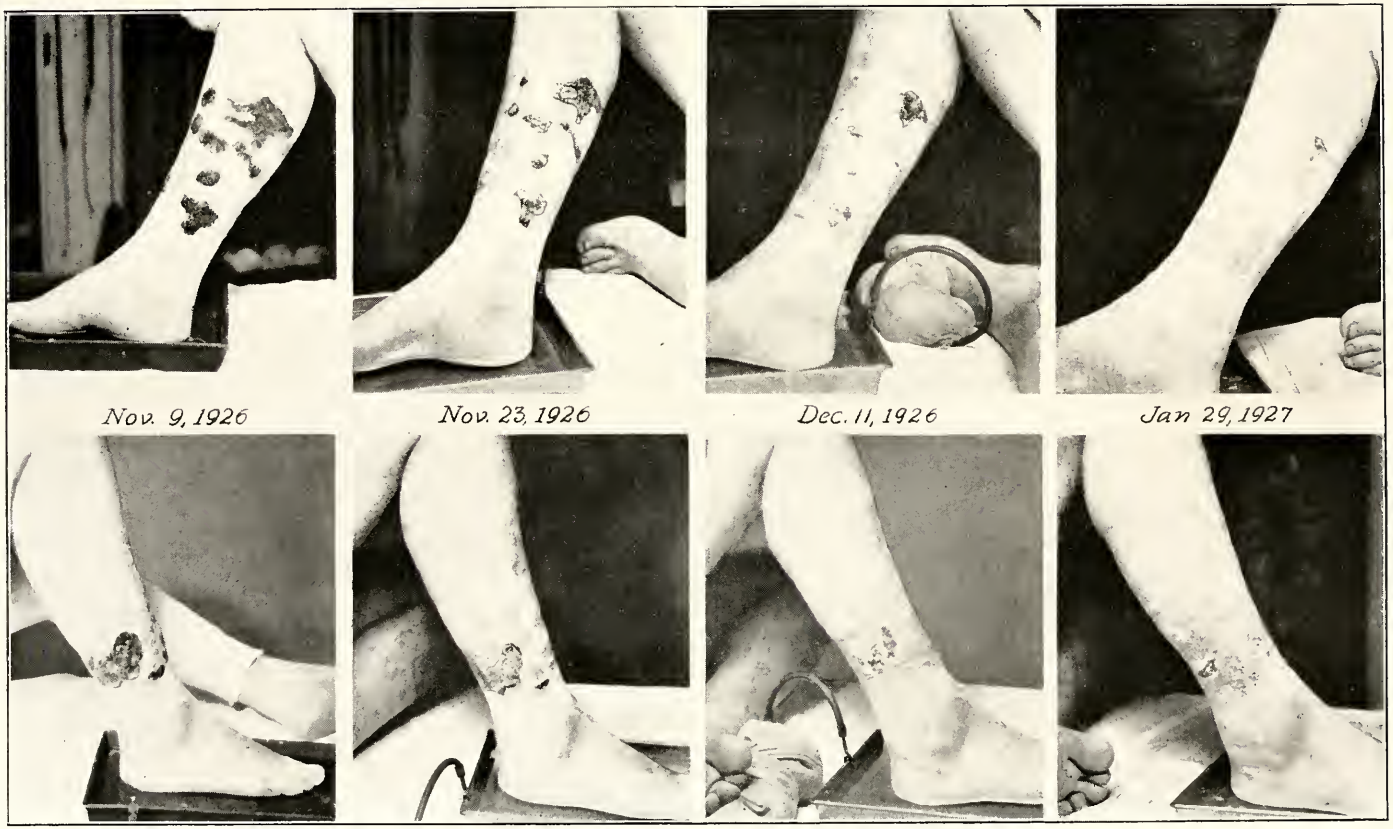
The ultra violet ray has a great reputation in ulcers. It is an antiseptic, a vaso-motor dilator, a cell stimulant. You must be careful with your young granulations, not to expose them to the ray too long or it will kill them. But the greatest value of the ultra violet ray in these cases is from the body ray by which the calcium metabolism of the blood is raised.

Below is the history as written by the patient.

Charlotte, N. C., Dec. 17, 1926.

Dr. J. R. Alexander,
Charlotte, N. C.
Dear Sir:

Agreeable to your request for the history of my case of burns, I will set forth the facts as accurately as I can.



Ulcers from Gasoline Burns Received Sept. 26, 1925. Healed by Physical-Therapy, After Two Attempts at Skingrafting.

On the 22nd of September, 1925, while doing some repairs on my automobile I had about a quart of gasoline in a bucket in which I had been washing some greasy parts. This bucket caught on fire and was accidentally spilled across my legs, saturating my pants with the burning gasoline.

I received what the doctors term "first degree burns" on my right foot, left leg and both hands, but the most severely burned area was from just above the ankle to within two inches of my knee on my right leg and was termed as a very bad "third degree burn." This area seemed to be what I would term "roasted" and the skin had a dark brownish color.

I was attended by Dr. Frank Ray and he applied solution of picric acid from the beginning on all burned parts and re-dressed my wounds one time each day. I remained at the Mercy General Hospital for thirty days and was then removed to my home. Dr. Ray began cutting off the burned skin on my leg in about two weeks, doing a small amount each day until it was all removed from all around my leg on the area from above the ankle to near the knee as outlined above. This was done without administering anesthetic and was was practically painless. Underneath this slough the flesh appeared to be burned, and the excretion was so much that a receptacle had to be used after the bandage became filled and it would come through. Boric acid solution and some other solutions were used when removing dressings. Sheets of silver foil were used as a dressing before wrapping with bandage. All the wounds except the "third degree burn" healed up nicely and on schedule time.

I went to St. Peter's Hospital in the early part of February, 1926, at which time Drs. Wiley Moore and Frank Ray grafted skin and I think covered about half the burned area and about sixty per cent or seventy-five per cent of this took and made progress in spreading until probaably over half the wound was covered with skin, but in about forty-five days growth ceased.

I returned to St. Peter's in May, 1926, and had another skin graft by the same doctors, but this grafting was without much success. There was very little progress made after this, except at one time in August after a constant soaking of hot water epsom salts solution and applications of boric acid salve. Growth kept up for about two or three weeks and suddenly ceased. Excessive granulations or proud flesh appeared in abundance and was removed from time to time but would re-appear in a few days. So far as I am or was able to know I never knew of more faithful service than I received. There was almost no offensive odor at any time, and heard comments from various people at times who had seen other burns say that they never saw cleaner wounds caused by burns.

About the middle of October my leg began to give me more pain and swelling was more prevalent until I came to you and received your first application of treatment by your ionization method. You know the rest.

Sincerely,

A. M. Hicks.

You will see from the above history that this case had had not only skilled treatment but that he had remained loyal to his physician and

surgeon until he was brought to me by his physician on November 5, 1926. Notwithstanding the skilled treatment he had received and the loyal and obedient patient he had been, his leg was in a dreadful condition as shown in a picture taken November 9. I am very sorry indeed that I did not secure a picture four days earlier, before the treatment was started. At that time there were eleven ulcers on his right leg, two of them more than three inches in diameter, with pus exuding from each one. The leg was tightly swollen from knee to ankle. In the first picture you will see the effect of ionization that had been given to him on November 5 and 7, causing a grayish appearance and a wrinkled condition of the skin. At the time he was brought by Dr. Ray he was suffering a great deal of pain. Two nights previous he was unable to sleep any during the night on account of the pain.

He was very skeptical about the benefit from physiotherapy and it was wholly on account of the advice and persuasion of Dr. Ray that he began it, but since the first treatment he has been very enthusiastic about its value. We began treatment on November 5th, using ionization two per cent sulphate zinc solution by applying in cotton around the leg and attaching the positive pole above the knee. The cotton was kept saturated with the zinc solution. This treatment was used twenty to thirty minutes. At the close of this time dia-thermy was used as shown in the picture, about 800 to 1,000 m. a. for a period of thirty to forty minutes. This was followed by ultra violet ray, both locally and general body ray. The treatments were usually given every other day, except the ionization which was given in the first two treatments and since then about every ten days. After the first few treatments radiant heat was added for its superficial stimulating effect. The dressing has been bismuth and castor oil paste, except after ionization, when the bismuth was used dry. The patient was relieved of pain by his first treatment and, as shown by the picture, you can see his improvement was steady. The welding of the tissue is so good that one cannot tell where the ulcers were. If the leg is given proper care, I do not think there will be any breaking down.

If we can heal leg ulcer by such treatment should we not be able to cure similar pathological conditions no matter where they are located? For instance, gastric ulcer. We have been using belladonna in gastric ulcer as a vasomotor dialator, both for treatment and for X-ray pictures but sometimes it takes one, two, and even three weeks to obtain sufficient dilation for an X-ray picture. It used to be that we gave belladonna by the mouth in refraction work. What would you think of a physician who did that now? We can get vasomotor dilatation in any part of the body by giving direct diathermy through that part of the body, and it does not take one, two, or three weeks to get it, but we get immediate results, without disturbing the rest of the body. You can obtain vasomotor dilatation in the stomach by giving third degree reaction of ultra violet, about a foot in area, to any part of the body and thus relieve the pain. The application should be repeated in some other part of the body every two or three days, and at the same time general body ultra violet should be given.

As physio-therapy relieves the pathologies in ulcer so will it relieve similar pathologies: enlarged glands, the gall bladder, prostate gland, uterus and ovaries, etc.

Proper equipment is essential, but there are other things that are just as important, if not more so.

First, accurate diagnosis and knowledge of pathological condition.

Second, knowledge of physiological action of the various modalities upon both normal and pathological tissue.

Third, knowledge of the application of the different modalities.

DISCUSSION

Dr. C. S. Lawrence, Winston-Salem: I am very much interested in Dr. Alexander's paper, from several standpoints. It is very interesting and very timely. Some of the most miserable cases in my experience have been cases of leg ulcer that would not heal, cases that had been going on for years leading an invalid life and suffering great pain. We have now certain methods by which these patients can be relieved and relieved promptly by a method of physical therapy. Physical therapy, to my mind, is one of the greatest adjuncts to the doctor's armamentarium certainly in this decade—I was going to say this century. The unfortunate thing about physical therapy is that it has come down through the hands of the quack into the hands of the scientists who have worked it out during the last five years, until now we know physical therapy from a scientific standpoint. For instance, we can measure the amount of diathermy, giving a patient accurate doses, just as you would measure digitalis; we can measure the amount of violet ray given patients, just as we can measure castor oil; we can measure the amount of photo-light in the same manner. Wright called attention long ago to the fact that the patient manufactures his own antiseptic and aseptic healing solutions by increasing the amount of blood going to the parts and putting out the serum which digests and destroys the invading organism. That was Wright's theory, promulgated years ago. Wright had the same idea the physiotherapists have now; his idea was along that same line; and he got results. His staff gave his patients personal attention, and I can not lay too strong emphasis on that, on the idea of the doctor's becoming thoroughly acquainted with his apparatus and his patient and giving the apparatus and the patient personal attention. If you fail to do that you do not get good results with physical therapy.

I think the ionization of leg ulcers does two things, cleanses the ulcer and produces a fertile field for the growth of granulation tissue and destroys the bacteria. Diathermy, massive heat through the leg, increases the blood supply; in other words, it washes out the leg with blood and pours out the serum into the wound that brings about healing.

I was very much interested in the paper.

THE INHERITED PRE-DISPOSITION TO DISEASE

By John Saliba, M.D., C.M., Elizabeth City, N. C.

I do not know of any physician or surgeon who does not at one time or another feel it annoying, monotonous, tedious or humdrum to make a careful and faithful record of his observations in regard to the personal and family history of his patient.

To stimulate and persuade the members of our profession to take and keep the history records of their patients, we must show them evidence of its value and proof of its usefulness.

It is with this object in view that I am inviting your attention to the problem of inherited pre-disposition to disease.

It has been usual and customary when studying a disease, firstly, to consider its etiology—the causal agents, whether physical, chemical, or bacterial; secondly, to examine the morbid changes in the tissues which changes are not otherwise than reaction to the causal agent; thirdly, to elicit the clinical symptoms and course of the disease as displayed in the individual or groups of individuals; fourthly, to show the responses of these symptoms to medical or surgical treatment, to drugs, to dietary or to altered environment.

The human constitution does play an important part in determining the incidence of disease. The development or non-development of a disease is actually determined by the inborn physical qualities of the patient.

On the whole and in the average, human types breed true. If the parents are above or below the average in any natural quality, their offspring will probably be above or below the average in respect of that quality.

There may be no inheritance of the disease but of the diathesis, which diathesis is due to an impairment or devitalisation of the germ cell.

In the days when bacteriology and chemical pathology were yet unknown, wise old physicians, from Hippocrates onward, paid a great deal of attention to the subject of constitution, or physical types, of diathesis.

Why is it that certain diseases have a remarkably different incidence in different families or races or in the two sexes?

Why are diabetes and obesity common in Jews, and gall-stones in women? Shall we ignore, what has long been recognized, the familial transmission of the asthmatic tendency and the gouty tendency?

Have not these things a bearing on what we call diathesis?

As to the meaning of the term Diathesis: James Goodhart spoke of it as an "equivalent to family strain"; Jonathan Hutchinson described it as "any bodily condition, however induced, in virtue of which the individual is, through a long period, or usually the whole life, prone to suffer from some peculiar type of disease"; in Dorland's medical dictionary diathesis is said to be "a natural or congenital predisposition to a special disease"; and recently it was suggested by Ryle to think of diathesis as "a transmissible variation in the structure or function of tissues rendering them peculiarly liable to react in a certain way to certain extrinsic stimuli."

So far we have not been able to discover or explain what are the heritable qualities constituting the pre-disposition in the case of each disease, nevertheless and in spite of our present lack of knowledge, I believe, that we should accept diathesis as meaning inherited and not acquired susceptibility.

Recently in this country Draper has endeavored by elaborate measurements to separate certain diathetic types. The medical profession is greatly indebted to Draper for the revival of interest in Diathesis.

In his book "Human Constitution" Draper suggests that we should regard human constitution as comprised of four essential panels of human personality, each of which can be studied separately but without the conjunction of which the whole cannot be completely viewed.

These panels are the anatomical, the physiological, the psychological, and the immuniological.

Because the twenty minutes time limit will not permit me to discuss the relation of diathesis to the various groups of disease, I propose to consider only, as illustrations, duodenal ulcer, high blood pressure, and pernicious anemia.

DUODENAL ULCER

Those who see many cases of duodenal ulcer are impressed by three things: First, its greater frequency in men than in women, the ratio being about ten to one; second, its frequent occurrence in one family: third, the association of certain physical types with it.

Two physical types are prominently affected by and generally associated with duodenal ulcer. On the one hand we have the so-called "hypersthenic type," robust, muscular, broad-chested men with a wide epigastric angle; and on the other hand, wiry and lean individuals of a restless and nervous temperament, with brisk tendon reflexes and inability to put on weight.

In the study of a large series of healthy individuals by modern methods it was found that in the males seventeen per cent had hypertonic stomachs and fifteen per cent had hyperchlorhydria or high normal curves. A definite correlation was found between hypertonus and hyperacidity and also between these characters and the physical type of the individual. The hypertonic stomach was more frequent in the men with a broad epigastric angle. Gastric hypertonus was shown to be more than twice as common in men as in women.

In a large percentage of cases of duodenal ulcer a hypertonic form of stomach is present and persists even when the ulcer is healed.

In eighty per cent of cases of duodenal ulcer hyperchlorhydria is present and also persists after healing. This persistence of the hypertonus and hyperchlorhydria after the healing of the ulcer surely indicates that they are not merely an effect of the ulcer.

It is reasonable, as an authority has suggested, to argue that an overactive, overacid stomach, or a stomach over-responsive to nervous moods is more likely through mechanical and chemical unrest to perpetuate a lesion in the first part of the duodenum than any other physiological type of organ. In other words the various anatomical, physiological, and psychological qualities discernible in the hypersthenic state on the one

hand or in the lean and nervous constitution on the other between them help to supply the duodenal ulcer diathesis. It is probable that these are the inherited qualities which from time to time result in the development of several cases of duodenal ulcer in one family and which help to determine the sex incidence.

Just as most of us heal our tuberculosis foci so most of us, being endowed with the necessary constitution, heal the small lesions of the duodenal mucosa which many of us acquire. It is only those possessing the ulcer diathesis who are a great deal more likely to retain the lesion and by mechanical and chemical irritation to convert it into a typical chronic ulcer.

HIGH BLOOD PRESSURE. (HYPERPIESIA)

Sixty-two per cent of the sufferers of high blood pressure are found to be hypersthenic, broad-chested, plethoric or obese. The victims of high blood pressure are commonly endowed from their earliest days with abundant physical and mental vigor, a good or even excessive appetite, sometimes a great capacity for work and sometimes a great capacity for worry. These patients have an inherited physiological vigor. By overwork and overworry and overeating or by some combinations of these they throw undue strain upon their cardio-vascular systems and their metabolic functions.

Thus what was originally a physiological arterial hypertonus may become exaggerated into a pathological hypertonus and even be perpetuated so long that arterio-capillary fibrosis follows as a reaction to physical and chemical stress.

High blood pressure, with death from cerebral hemorrhage or "cardiac defeat" in the fifties or early sixties, is frequently a familial disease. Similarly angina pectoris may affect successive generations.

A reasonable explanation is that the germ-plasm continues to hand down qualities of tissue or tissue function embodying a tendency to react in precisely similar way, and at similar age in each generation, to the wear and tear of arduous years.

PERNICIOUS ANEMIA

As far back as the middle of last century, Thomas Addison noted that pernicious anemia occurred "chiefly in persons of a somewhat large and bulky frame and with a strongly marked tendency to the formation of fat."

Recently Draper has demonstrated a type of chest peculiar to pernicious anemia cases and described it as deep and wide but especially remarked on its "shortness."

While recognizing that pernicious anemia may follow an acquired gastric achylia due to gastritis, Hurst contends that a considerable proportion of all cases of pernicious anemia are secondary to a congenital deficiency of chyle-achylia.

The characters of the pernicious anemia diathesis, therefore, include the anatomical type and the tendency to retain fat observed by Addison; the short chest described by Draper; and the familial achylia made known by Hurst.

Any individual endowed with these qualities is more liable, in the presence of certain types of infection, to develop pernicious anemia than any individual not so endowed.

I have said nothing that has not long been known. All I have sought is to briefly state and illustrate the influence of physical type on reaction to disease.

If we familiarize ourselves by careful observation with the different physical types and their association with particular forms of disease we shall frequently help ourselves in diagnosis.

Although all of us cannot expect to become as efficient or as illustrious as my former teacher John Bell of Edinburgh, from whom Sir Arthur Conan Doyle drew the character of Sherlock Holmes, yet if we cultivate the habit of observing our companions, our fellow residents, our fellow passengers, and our fellow passers-by, of assessing their physical type, and of attempting to read the diagnosis which only too many of them will have clearly written in countenance, posture or in gait, we shall find it excellent practice. It will improve our clinical power.

Further the more familiar we are—especially those of us who are family physicians and general practitioners—with ancestries and with physical types and their liabilities the more valuable our advice and professional service are to the individual and the family.

The son of a father with duodenal ulcer will be well advised not to oversmoke, to visit his dentist regularly, not to bolt his meals or to go too long without them.

The offspring of a man with high blood pressure strain may be persuaded to temper their lives, to avoid over-indulgence in food and drink and may justifiably be impressed, especially towards middle life, with the virtue of taking regular holidays. Children with a bad ancestry in respect to pernicious anemia might reasonably have a test-meal on reaching adult life and be given a daily ration of hydrochloric acid if found to have achylia.

Before I conclude, let me give this warning that we must always be careful lest we commit the error of accepting as diathetic qualities manifestations which are really the effects of the disease.

A STUDY OF SOME BRAIN AND SPINAL CORD CONDITIONS OF GENERAL MEDICAL INTEREST

By A. A. Barron, M.D., Charlotte.

The advance medically and surgically in the management of certain brain and spinal cord lesions makes it necessary that we recognize early symptoms. In order to do this we must study our patient as a whole. Early symptoms are often vague and indefinite and demand the closest interpretation.

In this paper I shall refer briefly to: two cases of pernicious anemia, two spinal cord cases, three brain hemorrhage cases and to the value of spinal fluid studies.

Case No. 1: Mr. H., age 58. Diagnosis: Pernicious anemia, combined spinal sclerosis. First seen August, 1926. Complaint—numbness, unsteadiness of gait and weakness. The first symptom to attract his attention occurred three years ago.

This symptom was a numb and dead-like sensation in left great toe. In about six months he noticed some numbness in both feet and legs and his gait became unsteady. He was advised by his physician to rest. After four months' vacation he felt better and gait was greatly improved but numbness persisted. He was able to follow his occupation for a period of about a year. Gait again became unsteady and he began to suffer in addition with digestive disturbances. Symptoms fluctuated. On examination three years after his first symptom gait was very unsteady—had a definite romberg. He exhibited a spastic motor weakness in lower extremities characterized by active knee jerks, ankle clonus and babinski on left side. Unable to recognize sense of pressure or position of toes. His speech was somewhat thick. He had at times some difficulty in voiding. His mucous membranes were rather pale, tongue presented a smooth appearance with some redness about edges. Liver nor spleen palpable. Unable to obtain stomach analysis. His spinal fluid was negative throughout. Blood examination: W. B. C. 7,000; red cells 3,800,000; haemoglobin 75%; Polys 68, Lymph 28, Eos. 2, Baso. 2.

Comment: The history suggested that we were dealing with a disease with remission. His blood picture was not conclusive. We were unable to do a stomach analysis. His sensory disturbances particularly numbness and the remittent characteristics, led to the conclusion that the patient was probably suffering from pernicious anemia. Symptoms progressed and he became bedridden in October, 1926. Blood picture at this time was typical of that of pernicious anemia. Autopsy confirmed diagnosis.

Case No. 2: Final diagnosis: Pernicious anemia, combined spinal sclerosis, gastrica achylia. Mr. O., aged 44, traveling salesman. This patient was first seen in 1924. Routine examination was essentially negative. Stomach analysis not done because one had just previously been made and patient refused to have another. He reported that he had a diminution of acid. His complaints were nervousness. He was subject to periods of despondency and depressions. Had various phobias and obsessions. No numbness or tingling. His blood picture was normal except he showed haemoglobin of 75%. He was classed as a functional case.

In February, 1927, he consulted me again, complaining chiefly of numbness and tingling in lower extremity and in hands, a band-like sensation about abdomen, unsteadiness of gait.

Blood picture: R. B. C. 2,800,000; Hgb. 70% Polys 52, Lymph 46, Eos. 2. R. B. C. moderate variation in size, chiefly macrocytes, some poikilocytosis. Form of red cell curve that of pernicious anemia. No free H. C. L.

Objectively there were no striking neurological findings.

The early symptoms of pernicious anemia are usually vague and indefinite. Some of the first symptoms are those relating to the nervous system. We must remember that in the stage of remission the blood picture may be entirely normal. Also we must further remember that the condition causing the blood changes is responsible for the spinal cord changes.

Case No. 3: Mr. K., seen February, 1927, age 19. Diagnosis spinal cord tumor. The first symptoms to attract the patient to his condition occurred March, 1926, while he was working in the field. He had what he termed a "catch in the back" after lifting a rock. This symptom was sufficient to stop

him from work for a few hours. He returned to his work but began to suffer with a backache principally in lumbar and sacral regions. Backache at times severe. He continued to work irregularly but backache persisted and in two or three months noticed some weakness in lower extremities. Weakness gradually progressed and in December became bedridden with a bilateral paraplegia, inability to void or control bowels. When seen in February he had a bilateral paraplegia of lower extremities and complete loss of sensory disturbances from the eighth thoracic segments down. There was complete block. Operation by Dr. Gaul revealed a good sized tumor at eighth dorsal which was comparatively easily hulled out.

Case No. 4: In January, 1926, I saw a patient suffering with intense pain in sacral region. He had been a sufferer for two or more years. He was unable to void, had no control over his bowels. He had suffered so intensely that it required large quantities of opiates to keep him quiet. He had visited several clinics and evidently in one or more places had been considered a neurotic subject and a drug habitue. His symptoms were severe pain in the back, pains down both sciatics, more especially right, inability to void or control bowels. On examination he showed typical symptoms of a cauda-equinae lesion, that is, a horseshoe shaped anesthesia in about anal region and thighs, anesthesia extending down to about middle third of right thigh, diminished reflexes.

X-ray studies failed to show any positive findings as to a bony lesion. At operation an extensive malignant lesion involving sacrum was found.

It is impossible to go into a discussion of spinal cord tumors, however I wish to refer to them in a general way. There are three established cycles in the life history of a spinal tumor. The first or root cycle is usually longest. If the posterior roots are involved or affected we find anesthesias, hyperesthesias, hypesthesias and pain. When the anterior roots are involved tremors, muscular spasms, spacticity, atrophies and weakness are usually found. The second cycle is that of the Brown Sequard syndrome, paralysis or weakness and the loss of deep sensation or sense of position on the side corresponding to tumor and on the opposite side impairment especially of pain and temperature sensations. The third cycle is characterized by weakness and later paralysis of bladder and rectum and exaggeration of above symptoms mentioned.

Pain is of diagnostic value when it is related to a definite area. According to the seat of the pain a diagnosis of sciatica, angina pectoris or intercostal neuralgia is often made. Pain is not necessarily present in all cases.

The most frequent site for spinal tumors is in thoracic region. The majority are probably on the posterior or postero-lateral aspect of the cord.

Case No. 5: Mr. E., age 28. Patient seen January 2, 1927, in unconscious condition. Clinical diagnosis, cerebral hemorrhage. Final diagnosis, cerebral hemorrhage—encephalitis. As is frequently the case a definite history was hard to obtain although his people were very intelligent. He had been a sufferer from an intense headache for a week,—especially over right eye and it was thought by some that he had a probable sinus disease. This intense headache or pain over right eye was evidently due to pressure on the fifth nerve, opthalmic divisional area. Questioning his wife carefully it was learned that he had not felt well for

a period of about six weeks. At the beginning he had symptoms of a mild cold infection and treated himself. For several weeks had felt weak, tired easily, both mentally and physically, and found it necessary to lie down for an hour or so every day. Two days ago while standing in drug store, suddenly collapsed. This was followed by headache, nausea and vomiting.

When seen he was unconscious, right extremities were held rigidly, frequent clonic-movements of left, weakness of right facial muscle, right pupil dilated. Spinal fluid bloody, under pressure. It was evident he had had a cerebral hemorrhage. Autopsy (Dr. Todd) revealed a non-suppurative meningo-encephalitis, thrombosis, cerebral softening and massive hemorrhage.

Case No. 6: Mr. L., age 49. September 27, 1926. Diagnosis: Leakage or small rupture at base of brain, probably one of the posterior groups of the circle of Willis.

History: About two weeks ago while working on his automobile, he suddenly felt faint, became nauseated and vomited. This was followed by severe headache in occipital and frontal region. Felt very dizzy. Vision somewhat blurred. When he was seen ten days later he had symptoms suggestive of meningitis. Complained of severe occipital headache. His neck was rigid and he had a kernig. Absence of abdominals and knee jerks. His spinal fluid showed an orange-like color, representing a recent hemorrhage, cell count 200, under increased pressure. Negative Wassermann. Increased globulin and albumin. Drainage relieved his headache. On the tenth day he left the hospital in good condition except for his weakness. There was no evidence from the study of his eyegrounds or his peripheral vessels that he had a general arterio-sclerosis.

Case No. 7: Mr. M., age 39. Consulted me November 17, 1926, with pain in chest and upper abdomen and shortness of breath. It was evident he was suffering from acute cardiac decompensation. He had an aortic insufficiency, probably an aortitis. Blood pressure of 180/110. Pulse rate of 120—a large heart. On the third day he developed a hemoplegia of right side. Blood Wassermann reported positive.

Autopsy. (Dr. Todd). Summary.

Primary fatal lesion—aortitis luetic—aortic insufficiency—cardiac dilatation—secondary congestion of all viscera. Terminal lesions—multiple embolic arterial occlusion of brain with secondary softening and edema.

Spinal fluid studies are often of extreme importance aside from the standpoint of the cell count and Wassermann reaction. A quantitative sugar determination is of great value in the differentiation of tubercular meningitis and encephalitis. In tubercular meningitis there is usually found a diminution of sugar—in encephalitis an increase. The so-called paretic curve indicates nothing more than an increase in globulin. There usually occurs an increase of globulin in any parenchymatous or destructive lesion of brain. It is frequently, therefore, of value in brain tumors. An albumin increase is significant of meningeal involvement or irritation.

THE THERAPEUTIC PROPERTIES OF THE MINERAL WATER RESOURCES OF THE STATE OF NORTH CAROLINA

By William Edward Fitch, M.D.

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Mr. President and fellow members of the Medical Society of the State of North Carolina: I am glad to be home again, I am pleased to fraternize with you again, and proud to renew my affiliation with you and your society. I was a resident of this city for a few years, in my early professional career. I left it a small enterprising town, without street cars and with but few paved streets; returning I find a great city with all metropolitan advantages and conveniences. When I left here the Durham Bull was pawing the earth and he is still bellowing. When I departed Trinity College was just Trinity College; now it is the great Duke University, with all its departments great, and its Medical Department is destined to be the greatest Medical School in the world.

My feelings today must be something akin to that of the prodigal of old, on returning to his father's house; but instead of the ill will of an elder brother, I have been extended a most gracious welcome from my beloved confreres of thirty-two years ago, who, as it were, have "killed the fatted calf" of genuine hospitality. After an absence of more than three decades,—the greater portion of which was spent teaching and practicing the healing art in the city of New York—I found myself, like other men, when that maturity of age leads to greater thoughtfulness and sometimes seriousness, with an impelling urge to come home to my own people of my own race and nationality.

This nostalgia and longing to again live among and mingle with, my own people was so impelling that I came South to Buffalo Lithia Springs in Virginia, which was once claimed as North Carolina territory, and no doubt it would be yet, if Colonel William Byrd,—the chairman of the commission appointed by the Crown to settle the boundary dispute between the colony of North Carolina and Virginia, had not ruled in favor of his own colony. While on this boundary expedition Col. Byrd earned the gratitude of his Indian guide, the latter in turn disclosed to Col. Byrd the location of an Indian "Medicine Spring," to which the Colonel referred in his report "as cold as ice and as soft as Oyl." It was perfectly natural for Col. Byrd, being an English aristocrat and Virginia gentleman, to be partial to his own colony. At any rate, the dividing line was established three miles south of the medicine spring and the present confines of the Old North State do not, now, include that which was once its own—Buffalo Lithia Springs.

When I was invited to rejoin the society and to again participate in its proceedings, I was at a loss for an appropriate subject; however, I concluded that it might be profitable, at this time, to discuss with you the

therapeutic properties of the mineral waters of the Old North State and with your permission, I will now endeavor to discuss these complex medicinal remedies, compounded in Mother Nature's laboratory, and endowed with potent therapeutic properties.

Since the recorded history of our country goes back to only a comparatively recent date, the written history of our mineral water resources must of necessity cover only the past two hundred years. When the "pale face" was unknown in this country, so far back into the dim and distant past that the mind of man comprehendeth it not, the aborigines knew of and resorted to medicine springs for relief from their ills and infirmities. Legendary traditions of the curative properties of the more important mineral springs and spas in use today, were transmitted to the white man by his red brother.

This history of mineral springs and mineral waters in general, however, dates back and beyond the beginning of the Christian Era. The Egyptians, Arabians, Mohammedans, Greeks, Romans, and in fact all nations have used mineral waters for medicinal purposes from time immemorial. These centuries of experience have demonstrated that in certain chronic disorders the intelligent use of mineral waters surpasses the curative action of drugs from the corner pharmacy. While European physicians have always appreciated the curative virtues of mineral waters, American physicians have, through apathy or neglect, overlooked the value of mineral waters as medicinal agents in the treatment of chronic disorders; or that we have in our own country the counterpart of the best European springs.

It is a historical fact that mineral waters have been of great benefit to mankind. For the first five hundred years following the Christian Era, mineral waters were the only medicinal agents used by the Roman physicians, and their resort—"Agua Calientes"—has been in constant use for drinking and bathing purposes for more than 2,000 years. Josephus refers to the thermal baths at Caliorrhoe, near the dead sea, made famous by Herod the Great who resorted there for the use of the baths during his illness. The thermal baths at Bath, England, have a history extending back to the time of Christ, while mythology and legend carry the record back to 800 B. C. Part of the architecture of the bathing establishment, at this famous resort built by the Romans between 43 and 84 A.D. is still standing, though it has been in constant use for nearly 2,000 years. The springs of Ala-Shehr, the Philadelphia of the New Testament, have been in constant use since the third century, B. C., and the water from these springs is still bottled and sold throughout Asia Minor.

The necessity for teaching hydriatics in American medical schools is apparent on all sides. In the past medical students have not been instructed in the therapeutic properties of the various classes of mineral waters, nor are they acquainted with their physiological action and clinical indications. This knowledge is of momentous importance and cannot be successfully disseminated except through a chair in the leading medical schools, which so far, have shown little or no inclination to supply the dearth of information. Until this is done—and the science of Medical Hydrology properly taught, just as materia medica and therapeutics, American physicians will continue to send patients to European Spas,

where they know that on arrival, the patient will be placed under the supervision of a physician who thoroughly understands the physiological action and therapeutic effects of mineral waters and is skilled in the science of medical hydrology. During the recent past there has been manifested unmistakable revival of interest, on the part of the profession, in mineral water therapy. This renewed interest in hydriatics is encouraging, for we have in our own country every variety and class of mineral waters found in other parts of the world. If the American medical profession is satisfied to be feeders to European Spas, there is little incentive to study mineral water therapy; but if they want to keep abreast of present day science and render the best service to their patients, then they must of necessity understand crounotherapy and balneotherapy. Physicians who are well posted on mineral waters and understand the therapeutic action of the various classes and types of these medicinal agents will never malign them by saying "mineral waters are just wet waters and about as good as river water"; such pronouncements are indubitable evidence of unenlightenment on the subject.

The European Spas and watering places take an annual toll of at least $100,000,000 from Americans seeking health and recuperation at European resorts. Some of them go to foreign watering places under the delusion that foreign things are better than those at home; and that the more inaccessible and expensive a thing or place is, the better it must be, and others go because the prescribing physician is not creditably informed that in our own country we possess every kind and class of mineral waters which has made the European Spas so popular and wealthy. It is a serious reproach on the medical profession that so many thousands, even millions, of patients have spent small fortunes hunting health and happiness at European Spas when they could have had the same care and more considerate attention at home, and the additional advantage that our American Spas are not only equal to any in the world, but that in many respects far superior.

There are scores of spring resorts throughout the country offering every comfort for the invalid, while the greater American Spas offer all the comforts of a home, all the service of the best hotels, and all the advantages of the best sanatariums, with every comfort, convenience and luxury to be had at any spa in the old world. Europeans get relief at their home spas, and we should at ours. Change of scene and travel are just as good, just as beneficial, and just as invigorating here as in Europe, and this great country of ours, stretching from Canada to Mexico, and from the Atlantic to the Pacific, contains scenic effects as interesting as any in Europe.

There is imported into the United States annually something like 4,000,000 gallons of foreign mineral waters, representing in value more than $1,000,000; but our domestic consumption of mineral waters far surpasses this, reaching some 70,000,000 gallons a year and aggregation in value about $75,000,000. The magnitude and great practical importance of this aspect of therapeutics—the use of mineral waters medicinally—ought to awaken in the minds of the profession the great potential possibilities for scientific therapeusis through these God given natural medicinal agents which Nature compounds in her laboratory and pours

forth from the earth charged with potent therapeutic properties for the relief of chronic disorders, afflicting mankind.

North Carolina has some eighty spring localities, with about 180 individual mineral springs, of which sixty or more have been analyzed and thirty-three at various times used as resorts. In my new book, "Mineral Waters of the United States and American Spas," I describe twenty-three spring localities and give analyses of thirty-five springs. Only those springs whose analyses reveals sufficient chemical constituents to exert physiological action on the human body are described. There may be other springs of very slight mineralization whose waters exert medicinal action through their purity alone, which are not mentioned. To deny the value of "water cures" to such waters would be both incorrect and unfair, and while results from their use may be termed "water cures"; they could not be, properly, termed mineral water cures.

For some years I have been following the scheme outlined below, as a guide to the chemical classification of mineral waters based on their total saline content, viz:

16 parts per million	slightly mineralized
80 parts per million	lightly mineralized
400 parts per million	moderately mineralized
2,000 parts per million	moderately highly mineralized
10,000 parts per million	highly mineralized
50,000 parts per million	very highly mineralized

On careful study of the analyses of the various mineral springs of the Old North State, I find according to the amount of total solids in the various mineral springs; that there are, viz:

9	springs slightly mineralized
14	springs lightly mineralized
6	springs moderately mineralized
6	springs moderately highly mineralized
0	springs highly mineralized
0	springs very highly mineralized

It will be seen that the State has a large number of mineral springs and some variety of mineral waters, though none of them are highly mineralized. The alkaline waters predominate, followed by the chalybeate and sulphuretted water. The State has one spring in which traces of arsenic is found and an area where thermal waters are found, being the only area, with one exception, east of the Mississippi river.

Alkaline Waters: There are thirteen alkaline spring areas in the state; viz: All Healing, Barium, Bromine Arsenic, Buck Horn, Connelley's, Ellerbe, Jackson, Lincoln Lithia, Sparkling Catawba, and Rivermont Springs. The predominating chemical constituents in the waters of these springs are the bicarbonates of sodium, magnesium and calcium.

Physiologically, the sodic bicarbonated alkaline waters increase metabolism, dissolve uric acid, and allay irritation of the mucous membranes of the whole genito-urinary tract, with the elimination of deposits of uric, sand and gravel. The physiological action of magnesic, bicarbonated, alkaline waters stimulate secretions, neutralizes acidity, and in large

amounts exert laxative action. They are, perhaps, the best of all the bicarbonated alkaline waters for correcting acid conditions of the stomach. Their physiological action favors the elimination of uric acid deposits, in the bladder and kidneys, and allays irritation of the mucous membranes of the genito-urinary organs. Increased uric acid secretion is always a good omen, provided it is not due to increased uric acid formation, which may result, if an increased allowance of purin containing foods are ingested. Calcic bicarbonated alkaline waters inhibit secretions of the digestive, respiratory and genito-urinary tracts. Such waters would exert beneficial action in cases of obstinate diarrhea.

Alkaline-Saline Waters: There are four alkaline-saline spring areas in the State: Mount Vernon, Seven Springs, Rocky River, and Cleveland Springs—with a total of twelve springs. All of the alkaline-saline waters of the State are of the sulphated class; the muriated class is not found. The sulphated alkaline-saline waters are diuretic in action, and in large quantities increase peristaltic action, liquify the intestinal contents and promote slight purgative action without unpleasant after effects. This class of waters stimulates the excretion of bile and improves the tone of the muscular tissues of the bile ducts, and thereby assist in the expulsion of excrementitious matter. They are obviously of great help in promoting proper function of the stomach and aid the action of synergistic galenicals which may be indicated. This class of waters also acts on the circulation of the blood in the liver, assuages catarrhal and inflammatory changes in the liver, gall-bladder and bile ducts, diluting the bile and promoting its secretion.

The muriated alkaline-saline waters are especially valuable in the treatment of catarrhal conditions of the mucous membranes of the stomach and intestines, biliary passages and genito-urinary tract. They increase the flow of urine and the excretion of uric acid. Eminent research workers aver that this class of mineral waters does not affect protein metabolism.

Saline Waters: There are only two spring areas whose waters come under this classification, viz: Moore's Springs and Vitalizer Spring, with three springs. The waters from these two areas show the highest amount of total solids of any springs within the State. Physiologically, the sulphated, saline, waters exert a laxative action, according to the percentage of the predominating sulphate ions present and the quantity of the water ingested. The calcic, sodic, sulphated saline waters exert a carminative action on the stomach mucosa, dissolving and eliminating mucous from the stomach and bowels. It also relieves kidney irritation, rapidly facilitates diuresis, increasing kidney function. Their action promotes interchange of fluids and salts in the tissues, modifies secretions and excretions and stimulates oxidation and cellular activity. This class of waters also exerts diuretic, antacid and disintegrating effects upon vesical and renal calculi; the urine is rendered less acid and less irritating and much less likely to deposit urates, therefore the tendency to stone formation is decreased and when present, the solvent action of the waters will gradually disintegrate stone formation.

Ferruginous Waters: There are four spring areas in the State where chalybeate, ferruginous or iron waters are found; viz: Haywood White Sulphur, carrying 727 milligram of the bicarbonate of iron to the liter; Panacea Springs carrying 50 milligrams of the bicarbonate of iron to the liter; Seven Springs all of which carry small amounts of the bicarbonate of iron; and Rocky River Springs also carrying small amounts of the iron bicarbonate. Of all the iron waters the bicarbonated are the most agreeable to take and the most efficient in action, because of their prompt and ready assimilation by the system due largely to the free and combined carbonic acid in solution in the water. Physiologically, this class of waters increases the hemoglobin content of the circulating medium, and in connection therewith increases the temperature, pulse and body weight. They also stimulate a flagging appetite, promote bodily vigor and allay intestinal activity.

Sulphuretted waters are characterized by the presence of sulphuretted hydrogen or the sulphides of sodium, magnesium or calcium. These waters, physiologically, increase the action of the integumentary system, the kidneys and intestines. There are three areas in the State where this class of waters are found, viz: Davis White Sulphur, Haywood White Sulphur and Hot Springs. The internal administration of sulphur waters stimulate the appetite and gastric function—where there is a moderate content of sodium chloride present, but if predominating excesses of calcium sulphate is present digestive disturbances will surely follow.

Thermic waters are abundant in the Rocky Mountain region and beyond, but it is interesting to note that there are only three areas east of the Rocky Mountains where hot waters are found, viz: The Hot Springs, Ark.; the Hot Springs, Va.; and the Hot Springs in Western North Carolina. The Hot Springs in Western North Carolina are more highly mineralized than the famous Hot Springs in Arkansas and they also contain a higher percentage of sulphuretted hydrogen per liter. There are more than twenty hot springs in this area. The action of hot sulphur baths increases the body temperature, stimulates heart action, diminishes blood pressure and stimulates nutritive changes in the tissue cells, particularly those embracing the organs of elimination.

Arsenic waters are very rare, only a few such waters are found in the United States. The most famous arsenic water comes from La Bourboule in France. The Bromine Arsenic Spring in the western part of the State is the only one in the State which carries traces of sodium arsenate. The physiological action of arsenic waters increases the appetite, aids digestion, and through its alterative action improves the whole nutrition of the body. It is of value in the treatment of skin diseases, of the ductless glands and the lymphatic system. They stimulate the secretions of the gastro intestinal tract and restrains destructive catabolism.

The Radio Activity of Mineral Waters is an interesting subject and one which has been widely discussed. Radio-active emanation, when present in a mineral water adds great value to its therapeutic potency, but since the North Carolina Mineral Springs have not, so far as I can learn, been examined for radio-activity, I will not take up your time in discussing the subject.

Ionic Dissociation: From the hydrolytic standpoint, an acquaintance with the laws which regulate saline solutions is of momentous importance, since a mineral water is an exceedingly complex inorganic body, whose properties are dominated by its physio-chemical constitution. According to the ionic dissociation theory, a salt in solution forms an electrolyte and is completely split up into ions, and that, under the influence of true vibratory conditions, perpetual exchange of ions take place from molecule to molecule; these ions vibrate, side by side, and, according to positive or negative influence, join with ions from a neighboring molecule. These ions vibrate in the solution under the positive or negative influence of their electric charges. Therefore it is fallacious to entertain the idea of a mineral water as an inert body; it represents on the contrary, a real mineral species, complex, of course, but a perfectly balanced association of molecules and ions endowed with certain specific properties of life. These molecules and ions possess an electrical equilibrium, a positive attraction or negative repulsion; and certain qualities of living forces; all of which come into play in the solution; the molecules and ions react on one another in a multitude of exchanges and combinations, rapidly made and as quickly undone.

A mineral water, like every complex solution, represents a living medium, the knowledge of which is yet incomplete but nevertheless highly interesting. Furthermore, in all probability, the ions rather than the undissociated salts per se, are reponsible in great part for the specific action of mineral waters; this dissociation theory explains, or at least gives an insight into, the pleasing effects obtained from the administration of mineral waters. Ionic dissociation does not, therefore, change the percentage composition of a salt, but may substantially change or modify its therapeutic potency. If the medicinal virtues of a natural mineral water depended alone upon its watery content, it is questionable if invalids would have sought the curative influences of the various mineral springs which have successfully stood the test for centuries past.

THE VALUE OF MINERAL WATERS IN CHRONIC DISEASE

Long clinical experience emphasizes the fact that the greatest usefulness of these medicinal agents is in chronic disorders. They are not suited in acute diseases, because, from their stimulating effects, they are prone to increase the activity of the circulation; but in chronic disorders they have been found eminently serviceable. To secure beneficial results in this type of disease, the waters like the disease will have to be continued for weeks or even months. Instantaneous cures need not be expected, but the remedy should be continued persistently and patiently administered and the cure will follow. Like all other medicines, mineral waters should be used, discontinued or modified in their dosage and usage, with a strict regard for their therapeutic action on the body and their beneficial or outward effects upon the disease. Whenever and wherever prescribed, their actions should be watched with the same care with which we note the action of any drug; they should be continued or temporarily or permanently discontinued or controlled in their action by

some suitable adjuvant according to the indications present and as the progress of the case demands.

THE ADAPTATION OF MINERAL WATER TREATMENT OF DISEASE

In prescribing mineral waters we are guided by the predominating chemical constituents as shown by analysis, but we can never be absolutely certain that substances present, even in infinitesimal traces do not play a more important role in the physiological action of the water than is generally conceded. Besides there is a great possibility that there are substances in colloid form or otherwise, which the astute analytical chemist cannot isolate and which no doubt exerts curative action. It is true that the science of chemistry has done much to put the administration of mineral waters above empiricism and on a safe and scientific basis of clinical experience. After chemical science determines the component parts, isolates the radicles and ions, it is from experience alone, that their use can be fully determined as to their specific virtue and applicability in a given disease.

Clinical Experience alone decides the therapeutic properties of any remedy. A drug, mineral water, or any other medicinal agent must be weighed in the crucial test of practice before its curative value can be determined. Some of the most eminent medical authorities, legion in number, in this and other countries, have tested, clinically, the medicinal virtues of mineral waters and given their unqualified endorsement attesting the therapeutic action of mineral waters as remedial agents.

CONFIDENCE IN MINERAL WATER THERAPY

An earnest presentation of the therapeutic properties and the scientific administration of a mineral water, based on its mineral constituents, as shown by analysis, and attested by the experience of eminent physicians, should command the serious attention and the unbiased consideration of the practitioner and convince him that we have in these natural medicinal agents a valuable addition to the materia medica, and one we can prescribe with the utmost confidence, when the pathology behind the disease or diathesis is appreciated and a suitable water selected.

SECTION ON EYE, EAR, NOSE, AND THROAT

CHAIRMAN: DR. JNO. B. WRIGHT, Raleigh.

The following business was transacted by the Section:

On motion of Dr. J. G. Murphy, duly seconded, Dr. S. D. McPherson, of Durham, was elected chairman.

Dr. V. M. Hicks was elected as secretary of the section, on motion of Dr. H. L. Sloan, duly seconded.

On motion of Dr. O. C. Daniels, the Committee on Tonsil-Adenoid Clinics was continued. This committee consists of Drs. V. M. Hicks, Chairman, Raleigh; Dr. J. P. Matheson, Charlotte; Dr. R. L. Daniels, New Bern.

Dr. J. P. Matheson moved that hereafter the Section on Eye, Ear, Nose and Throat meet regularly on Tuesday morning of the State Society meeting. Motion seconded and carried.

On motion of Dr. Hugh C. Wolfe, the Section voted that eye, ear, nose and throat specialists be so designated in the Transactions of the State Society.

CHAIRMAN'S ADDRESS

By DR. JOHN B. WRIGHT, Raleigh, N. C.

There are just a few thoughts or suggestions I have to offer to this section. If the Eye, Ear, Nose and Throat Section of our State Society ever expects to be all that it should and can be, first we must think, plan and work collectively and not as individuals. We must look at the State of North Carolina as a unit and not consider each member as such. In plain English we must develop team work and not individual stars. North Carolina in some ways has been looked upon as a pioneer—yes we are all proud of some of her achievements. There are many, many imperfections to be remedied in our State and some are in our section.

This section is comparatively young. Just a few years ago we met with the general medical section. When we first attempted a separate section there was some misgivings as to its being a success or even wise to attempt it. The success of our sectional meetings having been assured —our next goal should be to reach out to higher and more useful attainments. In order to be successful in this expansion we must be better prepared for efficient service. That means better trained men in our section. What I shall say is not with the intent of criticism save constructive criticism. It has not been but a very few years since a few months, certainly not over six, really constituted all the training our eye, ear, nose and throat men received—and these courses were given by private men in their respective specialties. This very poor training is very rapidly being discarded. This much is to our credit. Should our section place a standard of competency upon its membership and not let the bars down to just plain membership in the State Society, I feel safe in predicting, in the near future, we would be well repaid for our efforts in the quality of papers presented and the increase in proficient work in our

state. We should encourage originality in technique and operations and in instruments used etc.

Next I would suggest a survey of our resources (as it were). Have we capable men in all sections of our state prepared with training and equipment to take care of the unusual cases? How many giant magnets in North Carolina? I am indeed glad that a great number in our state have trained and equipped themselves to do endoscopy skillfully.

Turning to the other side of the question, may I not ask, are we capable? Are we equipped? And are we willing to give the people of North Carolina the service they need? In answer to these questions may I not give you, for your own consideration, a few figures?

There were 818,793 children in our public schools in 1926; 383,276 were in the elementary rural schools; 106,499 were in the elementary urban schools and 329,018 were in the colored schools elementary. Out of this number 534,392 were between the ages of six and thirteen. There were approximately 59,000 children inspected by nurses with the following defects; 603 hearing; 8,769 vision; 29,735 throat; 29,793 teeth; unclassified deformities 6,658. Total defects 75,558. Number of corrections in board clinics; throat 1,771; teeth 29,141. Total corrections 30,712. There were 100,185 children examined by health officers in 36 counties with 40,679 defectives. Corrections secured by health officers were as follows: Throat 3,929; teeth 26,687; eyes 1,012; orthopedic 526. Total corrections 32,154. Thus we find we have only examined 159,131 children out of 818,793—leaving 659,662 children not even examined. To examine our figures a little further we find that there were 116,237 children with defects and only 62,866 corrections. These figures should certainly give this section some food for thought. If bad teeth, refractive errors, diseased tonsils and adenoids do hinder the physical and mental development of children, and I am convinced they do, this section is simply deluged with opportunities for service.

Should every physical defect in every child in the public schools of our state be corrected before the child reaches the age of thirteen, then this section would have a record we could proudly proclaim to our sister states. To accomplish this it would require seven operations daily by every eye, ear, nose and throat specialist in North Carolina for twelve months, excluding Sundays. May I close by asking you this question, what would be the mental, moral and physical condition of the next generation of this state?

CANCER OF THE LARYNX

SYMPTOMATOLOGY, DIAGNOSIS, AND TREATMENT*

By Gabriel Tucker, M.D., Philadelphia, Pa.

It would seem a platitude to say that the early recognition of cancer in any part of the body is of the greatest importance in its cure. The repetition of this statement is justified, however, when we consider that in intrinsic cancer of the larynx early diagnosis offers a lasting cure of from 70 to 80 per cent. This is a much higher percentage of cure

*From the Chevalier Jackson Bronchoscopic Clinics, Philadelphia, Pa.

than can be obtained in cancer in any other location in the body. It has been shown by Cuneo that the richly developed lymphatics of the larynx form a network of their own which empty into small glands on either side of the neck and do not anastomose with the neighboring lymphatics. The slow metastasis, with early diagnosis, makes possible the high rate of cure in intrinsic cancer of the larynx. This makes it imperative that every physician, and especially every otolaryngologist, recognize the symptoms, appearances, and means available for the accurate diagnosis of incipient cancer of the larynx.

The classical symptoms as formerly taught, aphonia, dysphagia, pain in the ear, salivation, dyspnea, hemorrhage, fetor, glandular involvement, emaciation, and cachexia occur as evidence of far advanced disease; but little attention has been paid to the earliest symptoms of involvement, those for which the physician should be on the alert. The first symptoms are persistent local discomfort, persistent hoarseness, or the two combined, according to the location of the lesion in the larynx. Persistent hoarseness and discomfort in the region of the larynx occurring in an adult of any age should have the skilled attention of the otolaryngologist.

Age. Cancer of the larynx occurs rarely under the age of forty, but there have been reported cases of intrinsic cancer at sixteen and eighteen years of age, and of extrinsic cancer of the larynx at twenty-three and twenty-four years of age.[1] Only yesterday, in our clinic at the University Hospital the histologic examination of a specimen removed from an extensive intrinsic ulceration of the larynx in a man thirty-seven years of age was reported as epithelioma by Dr. Herbert Fox. The patient had been hoarse for nine months and during the past three months had only a whispered voice. In one hundred selected cases from the services of Dr. Chevalier Jackson and Dr. Fielding O. Lewis in which hoarseness was a symptom, Dr. Austin T. Smith found that the average time from the beginning of hoarseness until a diagnosis was made was eleven and a half months. Many of these cases were far advanced. Many had been treated under a diagnosis of "chronic laryngitis" without even an attempted mirror examination of the larynx.

Classification. Cancer of the larynx was classified clinically by Krishaber into intrinsic, extrinsic, and mixed. The latter class included those cases in which the lesion was both intrinsic and extrinsic. These cases were found to present the classical symptoms enumerated above. The intrinsic group included all cancers arising from the cord, ventricular band, inter-arytenoid region, and the subglottic area. Chevalier Jackson further subdivides this group into the *anterior intrinsic,* including the anterior two-thirds of the larynx, and the *posterior intrinsic* in cases in which the cancer arises in the posterior third of the larynx.[2] The earliest symptom in the anterior intrinsic group is hoarseness; in the posterior intrinsic group, local discomfort and hoarseness.

The extrinsic group includes those cancers arising from the epiglottis, arytenoids, aryepiglottic fold, the laryngeal surface of the pyriform sinus, and the pharyngeal surface of the cricoid cartilage. The earliest symptoms in this group are local discomfort and dysphagia.

Site. Cancer may involve any part of the larynx; epithelioma is the most frequent form; sarcoma and medullary cancer are rare. Glandular carcinoma most frequently involves the epiglottis. Contrary to the view of Virchow and Semon who held that benign growths most frequently invade the anterior two-thirds of the larynx and malignant growths the posterior third, Sir St. Clair Thomson has shown that the anterior two thirds is the most frequent site of the primary lesion in cancer.[3] This area corresponds to that area involved in the anterior intrinsic group of Chevalier Jackson, and is that portion of the larynx in which lymphatic leakage occurs late. The fact, as established by Sir St. Clair Thomson, that the anterior portion of the larynx is the most frequent site of cancer is of the utmost importance, because, with early diagnosis, this site is the most favorable for cure.

Local Appearances. Local appearances vary according to the location and stage of advancement of the growth, the presence of superimposed inflammatory reaction and ulceration. Seldom is the appearance so characteristic as to be conclusive. Many types have been described, as follows, by Sir St. Clair Thomson:[1]

1. "Persistent congestion and thickening of the cord."
2. "A definite tumor resembling papilloma, fibroma or angioma, and an irregular infiltration difficult to distinguish from tuberculosis and syphilis."
3. "A limited infiltration cupped or retracted in appearance."
4. "A defined tumor, single, sessile, white and reddish gray, and warty looking."
5. "A fringe-like border, white in color, giving the cord an irregular appearance."
6. "In the extrinsic variety a dusky red uniform swelling, which is generally a fleshy color with an uneven surface."
7. "On the epiglottis a cancerous growth in irregular, grayish white, dusky red, or dirty white in early ulceration."

Local fixation of the part involved indicates deep infiltration and advancement of the lesion. In many cases we have found, on biopsy, the local lesion cancerous when there was no local fixation on mirror examination.

Considering, then, the wide variation in appearance on mirror examination, and the many and variable factors in the production of these appearances, the welfare of the patient demands that a method of certain diagnosis be employed early before the disease has extended and the chance for operative cure is lost.

Diagnosis. Given a case of ulceration of the larynx in an adult, the three etiologic conditions to be considered are tuberculosis, syphilis, and malignancy. It is generally agreed that tuberculosis of the larynx, for all practical diagnostic considerations, is never primary.[4] Then the finding of an ulcerative lesion of the larynx with an appearance suggestive of tuberculosis with the finding of positive evidence of a pulmonary lesion is very strong presumptive evidence of laryngeal tuberculosis. In syphilis of the larynx the positive serologic reaction and the evidence of syphilitic disease in other organs, the favorable effect of a therapeutic

Figure 1. The Jackson anterior commissure laryngoscope, and basket tissue forceps, in correct position for removal of specimen of tissue from the larynx. With the patient in dorsal recumbency under local anesthesia, tissue may be removed from any portion of the larynx desired.

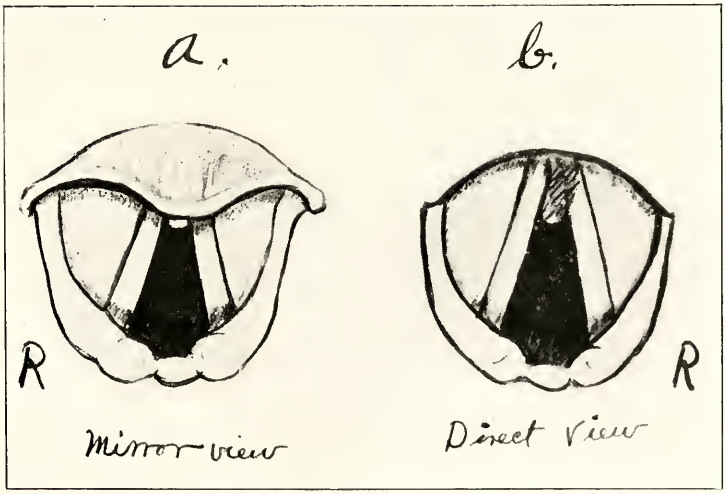

Figure 2. (a) Mirror view of larynx with anterior commissure growth almost completely covered by overhanging epiglottis. (b) Direct view of the same larynx with Jackson anterior commissure laryngoscope. The epiglottis was lifted forward and tissue removed by the technic as shown in figure 1.

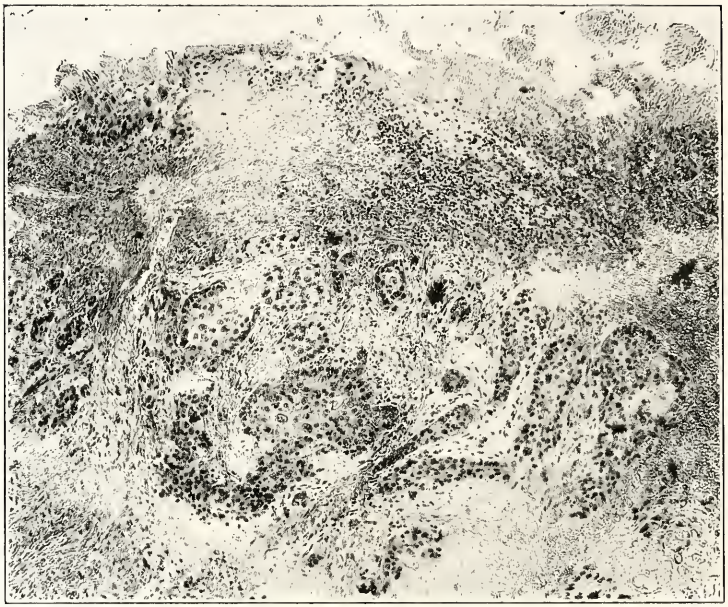

Figure 3. Photomicrograph of tissue removed from the larynx illustrated in figure 2 (b). Twenty-four hours after the taking of the specimen Dr. Herbert Fox reported, "squamous cell epithelioma."

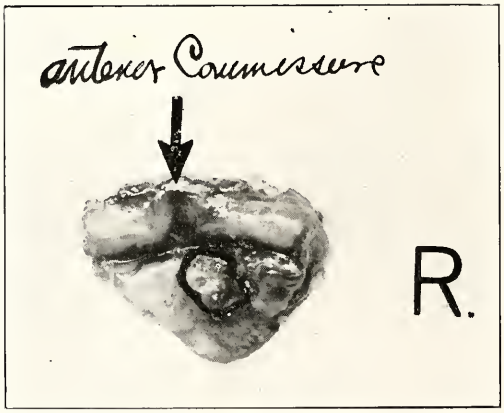

Figure 4. Tissue removed at laryngofissure, (actual size), within 48 hours after removal of the specimen for biopsy. A wide margin of normal mucosa surrounds the growth. The patient is well with a good voice six months following operation.

FIGURE 5. Photomicrograph of tissue removed from the larynx of a woman 32 years of age showing lesion definitely papillomatous, no evidence of malignancy. Dr. Crawford.

FIGURE 6. Photomicrograph of tissue removed from the same larynx as figure 5, five years later, showing membrane irregularly thickened and ulcerated, submucous tissue the seat of marked inflammatory reaction and the hyperplastic squamous epithelium infiltrating the deeper structures.

FIGURE 7. Photomicrograph of tissue removed from the larynx of a man aged 55, showing mucous membrane markedly thickened; epithelium hyperplastic and the submucous tissue markedly inflamed. There was marked hyperplasia of the epithelium suspicious of malignancy but no definite evidence of malignancy was found.

FIGURE 8. Photomicrograph of tissue removed from the same larynx as figure 7, three years later, showing mucous membrane ulcerated, epithelium markedly hyperplastic and definite evidence of infiltration into the deeper structures. The infiltrating epithelium shows considerable differentiation and many mitotic figures. There is marked inflammatory reaction of submucous tissue. Squamous cell epithelium.

test with antisyphilitic medication on the laryngeal ulceration, and the suggestive appearance on mirror examination, are strong presumptive evidence of syphilitic ulceration of the larynx. It must be remembered, however, that malignant disease of the larynx, particularly in a syphilitic subject may respond favorably for a time to anti-luetic therapy. It is also well to remember that an acute edema of the larynx may be precipitated by the administration of potassium iodide to a patient with an ulcerative lesion of the larynx. A provisional diagnosis of cancer of the larynx can then be made in an adult patient where all evidences of tuberculosis or lues are negative, and the appearances are suggestive of cancer, remembering, however, that cancer may co-exist with syphilis or tuberculosis, or that it may occur in a tuberculous or a syphilitic subject.

Every case should be thoroughly studied; a positive diagnosis should not be made on mirror examination alone. "That uncanny diagnostic sixth sense which does not depend upon the teachings or the literature for its inspiration," so well evaluated by Wm. V. Mullin in "Diagnostic Limitations in Laryngology,"[5] and so adequately defined by Dr. D. Bryson Delavan, as a "Subconscious reasoning based upon long experience of many closely observed cases," [5 6] should be developed by every laryngologist; for, as Dr. Delavan further says, "The beginner does not have the instinct for diagnosis. The man of long experience may acquire it."

In addition to this, in every case of early cancer of the larynx the conclusive diagnostic step should be biopsy. If biopsy is negative for cancer the specimen removed may afford evidence of some other infectious or neoplastic condition of the larynx, either on culture or histologic examination. If negative, repeated specimens should be taken, at proper intervals, and under proper aseptic precautions until conclusive evidence is obtained. By the use of the Jackson anterior commissure laryngoscope, under local anesthesia, with only slight discomfort to the patient, a specimen can be removed with accuracy from any portion of the larynx that it is desired. (Figures 1 and 2). A histologic report can be obtained by the quick method in twenty-four hours, (figure 3), and if the growth be malignant, the surgical procedure adequate for the removal of the growth can be instituted within forty-eight hours. (Fig. 4). Dr. Baxter L. Crawford states, "The examination of a number of the larynges removed by Dr. Lewis at laryngectomy showed no evidence whatever of metastasis as the result of biopsy, although in many instances the patient had refused laryngectomy for several months following a positive report from biopsy."[7]

In the examination of the larynx with the mirror we see only the surface of the lesion. In early cancer the appearances are not characteristic and the important thing to know is what the deeper cells are doing. This can be determined only by biopsy. Biopsy reveals another very important class of cases. The lesion in this class was described by Chevalier Jackson and designated clinically as "precancerous."[8] Time will not permit a discussion of the evidences presented by Dr. Jackson of the precancerous conditions, but the evidence is conclusive that cancer develops following non-malignant lesions in the larynx. Sir St. Clair Thomson, quoting Semon, states, "A malignant degeneration of a benign

neoplasm may occur."[1] Our pathologists often report to us that there is a suspicion of malignancy in the specimen of tissue examined. Chevalier Jackson quotes Dr. James Ewing, after his examination of one of these specimens, as saying, "This is the stage in which to treat cancer of the larynx, not after it gets well advanced."[8]

From our tabulation of the last 250 cases of cancer of the larynx at the Bronchoscopic Clinic I wish to report two cases from the group in which there existed a non-malignant lesion which seemed to be an etiologic factor in the later development of cancer.

Case 1: A woman, 32 years of age, presented a lesion of the larynx, a specimen of which on histologic examination showed papilloma and chronic infiltrative laryngitis. (Fig. 5) Five years later a specimen from the same patient showed squamous cell epithelioma. (Fig. 6). The symptoms of laryngeal involvement persisted from the time of the first examination to the second. (Pathologic reports by Dr. Baxter L. Crawford.)

Case 2: A specimen removed from an ulcerative lesion of the larynx in a man, 55 years of age, in March, 1924, showed "marked hyperplasia of the epithelium with suspicion of malignancy but not definitely malignant," as reported by Dr. Crawford. (Fig. 7). Operative removal of the lesion was advised at this time, but the patient refused and on his return, February, 1927, the specimen removed at biopsy showed definitely squamous cell epithelioma. (Fig. 8.)

Treatment: Adequate surgical removal is the only treatment worthy of consideration with the hope of cure of cancer of the larynx. The removal of an intrinsic growth by intralaryngeal surgery is not advisable because of the uncertainty of complete removal.

Laryngofissure. After early diagnosis laryngofissure will cure eighty per cent of the anterior intrinsic cases and will give an adequate voice, with no operative mortality, without a mutilating operation. Recurrences following laryngofissure may be amenable to reoperation by laryngofissure, and are always amenable to complete laryngectomy if the patient has been kept under proper postoperative observation. These patients should be examined by the surgeon who performed the laryngofissure at least every month for the first year.

Complete laryngectomy, according to Dr. John Edmund MacKenty, should be done in all intrinsic cases where there is extensive involvement.[9] Dr. Fielding O. Lewis feels that laryngectomy may also be indicated in extensive cases where the lesion is extrinsic or mixed.[10] In other extrinsic varieties, subhyoidpharyngotomy and lateral pharyngotomy are advocated.

The use of radium and X-ray is now generally conceded to have no place in the treatment of cancer of the larynx, except in some cases as postoperative radiation after laryngofissure or laryngectomy to prevent glandular invasion.[11] It may be used, also, in those cases of cancer of the larynx which are not amenable to surgery because of the location or extent of the growth. Dr. Henry K. Pancoast from his enormous experience at his clinics at the Philadelphia General and the University of Pennsylvania Hospitals states, "I no longer use radium in the treatment of laryngeal cancer except in special cases. Cancer of the larynx is not suitable for radium therapy; first, because of the resistent nature of

the squamous cell carcinoma which is the type most often found; second, because of the tendency to necrosis of the laryngeal cartilage after the intensive radiation necessary; third, because of the frequently inaccessible position of the growth."[12]

Tracheotomy. Tracheotomy for the relief of dyspnea with palliative radiation may be advisable for advanced cases.

CONCLUSIONS

1. The earliest symptoms of cancer of the larynx are hoarseness and local discomfort. A persistence of these symptoms in an adult should place the patient under suspicion of malignancy and he should be kept under the observation of an expert laryngologist until a definite diagnosis is made. Mirror examination, while the most important method for study, is not conclusive, and should be supplemented by general examination, X-ray examination, serologic studies, direct laryngoscopy, and biopsy to exclude cancer definitely in a suspicious case. Dr. Jackson says, "Every adult patient with hoarseness should be considered as possibly cancerous until proven otherwise by every means we possess."

2. Early diagnosis will permit a cure by laryngofissure in about eighty per cent of the cases.

3. Biopsy by means of the direct laryngoscope should give a positive specimen in every case of cancer of the larynx. But if the specimen is inconclusive or negative it should be repeated while any suspicion of cancer remains. In the hundreds of cases of cancer of the larynx in which a specimen has been removed for histologic examination at the Bronchoscopic Clinic we have never seen any evidence of metastasis as the result of biopsy.

4. Laryngectomy, subhyoidpharyngotomy, and lateral pharyngotomy will cure a good percentage of the extensive intrinsic and extrinsic cases.

5. In inoperable cancer of the larynx tracheotomy and palliative radiation may be advisable.

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DISCUSSION

Dr. J. W. MacConnell, Davidson: I am rising not to discuss this paper but to extend the thanks of the section to Dr. Tucker for bringing this to us. A paper by Dr. Tucker is always so complete and so plain that it leaves no room for anyone to add anything to it, and there is no necessity for us to enter into any discussion because we feel that when Dr. Tucker or anyone else from the Jackson Clinic presents a subject, we have the very last word. We thank Dr. Tucker for coming to us.

Dr. John B. Wright, Raleigh, Chairman: I wish to say that personally I am very proud and gratified that Dr. Tucker has come to us. The work they do at the Chevalier Jackson Clinic is so complete and so thorough that it is always a privilege for us to hear someone from the clinic.

HISTORY OF, AND SOME SUGGESTIONS AS TO SOME OF THE ANESTHESIAS USED IN EYE, EAR, NOSE AND THROAT WORK

By L. L. Simmons, M.D., Greensboro, N. C.

Divinum est sedare dolorem (divine is the work to relieve pain). Thus spoke Hippocrates.

"Pain is not to be reckoned as abnormal, but as nature's protest against the abnormal."

"All suffering is a partial death which comes upon some organ or condition."

The first operation is recorded in Genesis Cp. 2:21. "And the Lord God caused a deep sleep to fall upon Adam, and he slept. And he took one of his ribs, and closed the flesh instead thereof," thus is described the first anesthesia on record, but he did not tell what it was.

The history of the human race to find a means to control pain during operative procedure forms one of the most interesting chapters in medicine.

The writings of authors, from earliest antiquity down through the long centuries, deal with efforts in behalf of human suffering.

Sometimes surrounded by superstitions at times the most ridiculous; later, as knowledge increased, based upon more or less reason, but they were all futile and attaining the desired end only to a limited degree.

Among the earlier references to the use of narcotics is to be found, in Homer's "Odyssey," when Helen gave to Ulysses and his comrades the "sorrow easing drug," which probably consisted of the juice of the poppy and Indian hemp:

"Presently she cast a drug into the wine whereof they drank—a drug to lull all pain and anger and bring forgetfulness of every sorrow.

"Whoso should drink a draught thereof, when it is mingled in the bowl, on that day he would let no tear fall down his cheek, not though his mother and father died, not though men slew his brother or dear son with the sword before his face and his own eyes beheld it."

During the siege of Troy the Greek surgeons used anodyne and astringent applications to ease pain of their wounded, which probably had some antiseptic effect of which they were not aware.

It is possible that primitive men used pressure and cold to benumb the parts and lessen pain.

In time they no doubt learned that pressure over the region of the nerves and arteries had a more pronounced effect, though they probably did not know why.

The ancient Assyrians employed pressure over the carotids and produced a certain degree of anesthesia by cutting off the blood supply to the brain, and performed their operation of circumcision in this way.

The aboriginal natives of some countries practice this method today. That this practice must have been widespread, is borne out by the fact that the literal translation of the Greek and Russian names of the carotid artery is "the artery of sleep."

The ancient Egyptians used the juice of the poppy and Indian hemp, (the stone of Memphis) the fat of the holy animal of the land and the powdered skins of the crocodile, also the Mandragora Atropa, and they used gold and silver instruments to lessen pain.

Marcus Aurelius used ice in the sixteenth century.

In 1784 J. Moore, of England, used combined pressure with opiates morphine. Esmarch tourniquet.

Larry, (Napoleon's chief surgeon), reported at the battle of Eylau in 1807 that with a temperature of —19 degrees F., amputations were almost painless.

Later, through the observations of Arnott in 1848, Guerard and Richet, 1854, but especially through Richardson, 1866, was the refrigerating of the tissues for surgical purposes put upon a firm foundation by the use of ether sprays.

The electric current was first used in the middle of the last century to produce local anesthesia through cataphoresis with various drugs.

The discovery of the hypodermic syringe by F. Rynd, of Edinburg, in 1845, marked the beginning of a new era. Morphine solutions and tincture of opium were injected into the tissues and around the nerve trunks, with the idea of deadening them; but, while these agents possess some slight local anesthetic action, any decided effect which was obtained was due to their general action; however, many operations were performed under their use, administered in this way, and reported as having been comparatively painless.

Anesthetics are divided into two general classes: general and local. Of the general we have two principal ones used in this country—ether and chloroform.

Ether was discovered by Valerius Cordius 1540, and it seems that about the dates from 1840 to 1847, the great minds were at work on anesthesia, as both local and general anesthesias began to appear in a general way about this time.

Dr. Crawford W. Long first used ether March 30, 1842, as an anesthetic, and his patient assured him that he felt no pain, when he removed a tumor from his neck.

Dr. Long used ether for anesthesia 302 years after its discovery, and forty-two years after it was first used medicinally.

We will not discuss any of the chemical analyses of any of the anesthetics.

Ether can be used with almost all operations which come in the line of work that any surgeon may have to do—

1. Do not give it to a patient whose kidneys are diseased.

2. Do not give it when the stomach contains undigested food; the patient should be fasting for at least four hours, if possible.

3. Do not give it without removing the artificial teeth.

4. Do not give it unless the clothing is so loose as to allow freedom of respiration.

5. Do not give it when the pleural cavity is full of fluid.

6. Do not give any anesthetic to women, especially to young women, except in the presence of witnesses, who can testify as to your actions during the period of unconsciousness of the patient, as under such circumstances women sometimes acquire fixed delusions which can only be met by testimony absolutely proving their falsity.

7. Do not forget that ether vapor and air make an inflammable and explosive mixture, and that ether may take fire from the actual cautery as well as from a lighted match or candle.

8. Do not use any ether but the very best makes.

9. Do not forget that ether, like alcohol, lowers temperature, and that the patient should not be too much exposed to cold during operation.

10. Do not forget that ether causes death by respiratory failure, and that the color of the lips and ears is a better guide to the state of the blood than the radial pulse.

11. Do not forget that the anesthetic state is a state of danger, and the patient is not safe until the effects of the ether have entirely passed off.

12. Do not forget that ether is eliminated by the lungs and kidneys; so patient should be watched for some time after the administration.

Dr. J. Y. Simpson was the first one to use ether in mid-wifery practice, January, 1847, in Edinburgh, Scotland.

The administration of ether for surgical operations requires skill, intelligence and experience. The greater number of fatal cases, by far, have occurred in the hands of those who do not appreciate the responsibility they assume in using this powerful agent. The method to be followed is: First, to eliminate all cases of weak or diseased heart; and, if the operation is to be a long one, require prolonged administration of the

anesthetic, the patient should not be in a sitting posture, and use the drop method mixed with air, or gas bag.

Antidote: Artificial respiration, alcohol amyl nitrate and nitro glycerine.

CHLOROFORM

Drop or Gaseous Method: The anesthetic properties were discovered by Flourens March 8, 1847, and during the same year Dr. J. Y. Simpson, of Edinburgh, used chloroform November 4, 1847, successfully.

Indications for its Use: You can use with obstetrics, young children, old people, epilepsy, convulsive seizures of any kind. Tetanus and the like affections of the respiratory system.

Operations Involving the Upper Respiratory Tract: Operations in which the Trendelenburg position is indicated, obese and flabby patients and insane patients, and operations on the brain.

Contra-Indications for the Use of Chloroform: Weak anemic children, minor surgery, never in sitting posture, or when the body has to be moved, especially raised up, do not use with alcoholics or athletes, several of the septic conditions and with diabetes, very thin and cyanotic patients, or low blood pressure from any cause.

In surgical anesthesia the muscles are relaxed, and the pupils contracted to normal, the respiration (and this is the principal guide) becomes normal and automatic, the reflexes disappear, the pulse slows down, and should the face turn pale, and the pulse go below fifty, it is considered a danger signal to the circulation.

Antidote: Ammonia and amylnitrate.

LOCAL ANESTHESIAS

Local anesthesias. Infiltration method, by hypodermic route, and give time for effect before operation.

All patients stand local anesthesia better when fed with regular meals before operation, but contra-indicated with general anesthesia.

Using the needles by the route of Sherwood Dunn, Allen and Braun.

Cocain was first used by Koller, of Vienna, now of New York, in the year 1884.

"Within the short period of twelve months, the newly discovered properties of the drug had been tested in every important clinic of the world, and the utility of cocaine as a surface anesthetic had been put to trial in every form of intervention in which the insensibility of exposed or accessible mucous or cutaneous surfaces could serve the purpose of the surgical specialist or therapeutist.

"Thus it happened that within an incredibly short space of time a new literature sprang into existence in which was reflected the experiences of the operators throughout all the different fields of surgery."

And the various other local anesthesias now in use have been introduced since that time.

Ether is the antidote for cocain, administered as ordinarily given to produce surgical narcosis.

Eucain and betaeucain by Schering in 1896, hollocain by Hirschberg in 1897. Alypin by Impens in 1905. Novocain by Einhorn (the least poisonous of all), and demonstrated by Braun of Vienna, 1905.

Novocain is six times less toxic than cocain.

Tutocain is four times more toxic than novocain.

Ethel hydro cuprein the most powerful of them all by Unger in 1913.

Adrenalin by Takamine, a Jap, in 1900, which can be used in conjunction with most all of the local anesthesias.

Tutocain in 1922, and literature on same was late coming out, but you can find it page 2,093, Dec. 18, 1926, A. M. A. J.

I have been using this anesthesia for the past three years, and have found it to be all that is claimed for it in my line of work.

Almost any operation can be done with general satisfaction with local anesthesia, by using the right kind of needles, and proper application to the nerve center which controls the area for operation.

I have done mastoid, cataract, iridectomies, eye enucleations, strabismus, tonsilectomies, and various operations without pain.

Antidote: Alcohol, amyl nitrate, atropine, chloral, chloroform, ether, and morphine.

MEDICO LEGAL ASPECT OF ANESTHESIA

Apart from any criminal intent, a bone setter or a beauty doctor, a chiropractor, an osteopath, or a quack of any kind is as much at liberty to administer an anesthetic to his patient for the purpose of an operation as a qualified medical anesthetist.

It is, in my opinion, an unfortunate circumstance that at the present time, in the State of North Carolina, the responsibility for the result of administration of an anesthetic is not clearly laid down, and legislation to that effect, it is to be hoped, will not long be delayed.

It is my opinion that the anesthetist should hold the M.D., or D.D.S. degree, be required to have the requisite knowledge of his art and be held solely responsible for any fatality that may arise in its existence. Any doctor who uses any one but an M.D., or a D.D.S., cuts out the M.D., or the D.D.S., from the fee obtained thereof, and lessens the professional standing for the commercial gain to himself. In fact the anesthetist should be the best doctor, be he an M.D. or a D.D.S., who attends the operation. The anesthetist should thoroughly understand every detail of the operation, and be able to perform the operation for which he is giving the anesthetic.

HEADACHES FROM THE STANDPOINT OF THE EYE, EAR, NOSE AND THROAT MAN

By M. A. Lackey, M.D., Mooresville.

So much has been written on headaches that it seems only a repetition to discuss this subject; however, since a large part of the eye, ear, nose and throat man's time is spent in trying to relieve headaches we cannot spend too much time on this subject. Almost daily we have patients referred to us for examination and treatment. The first thing we must remember is that headache is not a disease but a symptom. The next

thing then is to find the cause. It takes a great deal of time and skill to differentiate some of these headaches that come under the scope of the specialist from those of systemic origin. Time will not permit a discussion of all the headaches that come to us for treatment. Only a few will I discuss and not to any length.

We might classify headaches as to region involved, taking up first those lesions causing frontal headaches. Under this head we have diseases of the anterior ethmoidal cells, maxillary sinus, frontal sinus, diseases of the teeth, diseases of the eye or orbit, e.g., astigmatism, hypermetropia, iritis, glaucoma, abscess, tumor or cyst of frontal lobes of the brain.

Lesions causing temporal headaches are: posterior ethmoidal disease, sphenoiditis, enlarged turbinates, deviated septum, eyes and gastric disturbances.

Lesions causing vertical headaches are: Posterior ethmoidal disease, enlarged turbinates, deviated septum, middle ear disease, pituitary disorders, depressed fractures and tumors or abscess at the base of the brain.

Lesions causing headaches of parietal region are: Diseases of the middle ear, inner ear, mastoiditis, abscess in temporal lobe, lateral sinus thrombosis and tumors of auditory nerve.

Lesions causing occipital headaches are: Diseases of the sphenoid, posterior ethmoids, enlarged turbinates, deviated septum, myalgia in the muscles of the nape of the neck, caries or tumors of the upper cervical vertebrae and cerebellar tumors or abscess.

The most frequent type of headache we have to deal with are those due to eye strain. A conservative estimate of this type would be about seventy per cent. Many patients show by ordinary test nothing wrong, and yet there is a definite eye disability. Most of these, on more detailed study, turn out to be examples of hidden trouble in the extraocular muscles, some are instances of mild or beginning glaucoma, others have the source of a reflex eye disturbance in the intranasal or dental regions.

Many headaches are typically migraine as far as symptoms are concerned. The fact that it may be hereditary has no diagnostic significance as ocular defects are even more often so. Neither does vomiting indicate true migraine as nausea with vomiting is at times a common symptom of certain forms of eye strain. Often these headaches are rather vague; again the cause may be very evident. When the cause is not very evident the ocular apparatus must be studied thoroughly. We must ever be on the lookout for cases of glaucoma and brain tumor. Will not attempt to discuss these conditions, only mention them as conditions to be diagnosed.

Another class of headaches that we have to deal with are those of nasal origin. The first of these are vacuum headaches. Some men claim these headaches are rare but in my experience I come across quite a few because I have gotten results from the treatment. These patients come in complaining of a frontal headache of a low grade unending character. The pain is worse in the morning. May be exaggerated by the use of the eyes. X-ray and transillumination will show the frontal sinus normal.

Tenderness will be elicited on pressure at the upper inner angle of the orbit.

These headaches are caused by closure of the frontal sinus. The oxygen will be absorbed leaving a partial vacuum. This causes tenderness of the sinus walls. The pulley of the superior oblique muscle is attached to the floor of the sinus and on use of the eyes the pain may be increased by the pulling on the sensitive sinus floor.

Closure of the sinus may be caused by a deviated septum narrowing the confines of the middle turbinate, causing cavernous swelling in the direction of the vault; or we may have a simple edema following an acute coryza. An enlarged turbinate may obstruct the sinus opening or we may have a turbinate that is simply lapped down against the lateral wall of the nose.

The treatment of these cases depends on which one of the above conditions is at fault. The object is to relieve the obstruction and to give proper ventilation to the sinus.

Another class of nasal headache, while not so common, may be encountered and prove very annoying, at least to the patient. This is neurosis of the nasal ganglion. This condition manifests itself by a neuralgic and sympathetic syndrome, either separate or combined.

The neuralgic syndrome usually follows a coryza of greater or less severity. A short time later pain will begin at the root of the nose, in and about the eye, and upper jaw and teeth. The pain may extend backward to the temple and about the zygoma to the ear, making earache; emphasized at the mastoid and reaching backward by way of the occiput and neck. It may extend to the shoulder blade, shoulder and even into the arm. This is the most usual picture but we may have numerous symptoms such as a stiff and aching throat, pain in the nasal cavity, perverse sense of taste, stuffy ears and blunting of sensation on the affected side as far down as the tonsil.

The above symptoms are sometimes supplemented by a sympathetic syndrome very wide in its distribution. The neuralgic syndrome is more common than the sympathetic though they are usually associated. The vasomotor phenomena, as the neuralgic, is preceded by an inflammatory process of more or less severity. The symptoms appear with explosive effect and out of proportion to the pathological lesion. With the great congestion of the nasal fossae there is found great sensitiveness of the internal nose, with redness and congestion of the external nose. The eyes are reddened and profusely bathed in tears. The eyes have the appearance of staring.

This condition may subside to appear again with the same explosive effect, or it may become more or less chronic with much milder symptoms.

I recently had a case presenting all the above symptoms to a very marked degree. I cocainized the nasal ganglion with immediate relief. The patient was free from any symptoms for about three weeks when I gave the second treatment and he has now had no further return of the trouble.

DISCUSSION

Dr. C. W. Banner, Greensboro: The subject of this paper opens up so large a field that of course no man can cover in a short paper. It would take a volume of no small proportions to cover this whole subject.

I have not found anything very characteristic about the location of headaches from different causes. We have a frontal headache caused from eye trouble, frontal headache caused from infected tonsils, frontal headache from sinus conditions, etc. I think the character of the pain sometimes will lead us in the direction of finding the cause of the headache. Sometimes we have constant headache; then we have those that are periodic; then we have lancinating pains and dull pains and also may have an acute condition. I think all cases of obscure headache should have, among other things, a refractive examination to find out if the eyes are at fault, then examine the sinuses, the teeth, the stomach, etc. Of course there is nothing characteristic about a sinus headache except that if only one sinus be affected the pain may be confined to that side. Then look for discharge of mucous or pus in the nose, but in the end we have to rely upon X-ray or transillumination to find the cause of these headaches. Another cause I have found is an impacted middle turbinate, where the septum is deviated and the turbinate presses against it. That is not very common, but I do find it in some cases. The most usual location for eye headaches, I should say, would be the temporal, next the occipital, and third the parietal region. I have not been able to make the distinction between what Dr. Lackey calls occipital headaches and vacuum headaches. The vacuum headache he speaks of is a rather new idea to me. He spoke of vacuum headaches in cases where there is obstruction to drainage from the sinuses. That type I have always considered due to congestion of the membranes in the sinus and accumulation of pus from infection rather than to a vacuum in that sinus.

Dr. V. K. Hart, Statesville: This opens up a tremendous field for discussion, as one of the section pointed out. I do think one point which has not been emphasized should be. We all encounter this type of patient, the patient who comes into the office complaining of headache, very often unilateral. Very often you find a distinct family history of periodic headache. We test them out by refraction, test them out for latent muscle errors in the eye, transilluminate the sinuses and X-ray them, and give them a complete physical examination; then for lack of anything else we put them in the migraine class, which is very unsatisfactory. I have had a patient of the so-called Sluder type or sphenopalatine type. The ganglion was injected, with complete relief; the relief lasted only two or three days, however. I was puzzled about the case and took it to Dr. Fay, of Philadelphia, a neurologist. He told me there are certain types of these headaches relieved only by sympathectomy, resection of the sympathetic cervical chain of ganglia. I think we can begin to see the tremendous effect that somal disease may have on pain in the head if we remember the anatomy. I may add that this patient of mine later was operated on and an abdominal condition found, and she has had no pain since.

Dr. O. C. Daniels, Oriental: I think after you have eliminated practically everything that is possible in the patient that comes in to you with headaches there are two things that should certainly be done, and those are to take the blood pressure and make a urinalysis. I made it a rule, when I was actively engaged in work, if a man came in with headaches of any severity I certainly took his blood pressure and had a urinalysis made; and in many cases where we thought the headaches were due to refractive errors they were due to high blood pressure or to kidney lesions. Very frequently a Wassermann will tell the tale.

Dr. Hugh C. Wolfe, Greensboro: It is true that headaches are often due to disease in distant parts, but sometimes the cause is not so distant, either. Sometimes we can get a lot of help by calling in the dentist. We forget sometimes that a pyorrhea or latent abscess at the root of a tooth will cause headache. An impacted wisdom tooth will also cause headache, and the condition will be relieved upon proper attention to the teeth. Another thing that will cause it is a chronic infection of the tonsils. I have seen cases clear up after removal of the tonsils. The tonsils may apparently be all right, from casual inspection, but by retracting the anterior pillar on the gland or causing the patient to gag you will see that there is some infection in the center of the gland. I have a patient now who has been having headache, and it developed that this patient had a Vincent's angina infection. I think he had had several injections of 606 before I saw him. Usually that is good treatment. I have been applying a mixture of caroid powder with 606 powder, spraying it in after making the patient gag. In some cases that will relieve the situation and will clear up the Vincent's angina. By all means the gland should be removed when you get the patient in condition to have it done.

Another thing that should not be forgotten is a luetic condition. Very often, when we exhaust our knowledge from the eye, ear, nose, and throat standpoint, if we send the patient down and have a blood test made we shall find what is causing the trouble.

NASO-PHARYNGEAL ADHESIONS

By A. J. Ellington, M.D., Burlington.

The literature and text book information upon the subject of naso-pharyngeal adhesions is very scarce. Phillips of New York in his text book of 1922 has the following: "In adults it is quite common to discover adhesive bands stretching from a central mass of adenoids to the tissues about the upper surface of the eustachian orifice." Concerning treatment he says: "Adhesive bands in the naso-pharynx should be cut away or otherwise destroyed. The author has devised a guarded galvanocantery knife, which may be introduced behind the adhesive band in a manner similar to that of the probe in figure 457, after which the current is turned on and a segment of the band destroyed. These and other post nasal and naso-pharyngeal growths are easily demonstrated by means of the pharyngoscope."

From my own observations naso-pharyngeal adhesions are due to the following causes—named in order of frequency: 1. Adenoids, un-

operated. In the child the bands are short and weak, while in the adult they are strong and often difficult to break. (See cut.) 2. Post-operative—following the adenoid operation and occasionally the history seems to point to traumation from other operations, such as upon the septum or turbinate bones, and the improper manipulation of the eustachian catheter. 3. Adhesions may occur from infections—primarily in the pharynx or as a result of tonsillitis or sinusitis. 4. Tumor masses, especially the cauliflower enlargements of the posterior tips of the turbinate bones. 5. Chemical burn. 6. Syphilis.

Pathologically, adhesions are new growths resulting from inflammatory processes. They are composed chiefly of connective tissue covered with mucous membrane. They may be distinct bands or simple folds which form pockets in the vault of the pharynx. These pockets often contain pus and act as foci of infection, just as infected teeth and tonsils. Dr. Myers Solis-Cohen of the U. of Pa. in an article in Annals of Otology, Rhinology and Laryngology, October, 1924, states that:

"A great mistake is made by many physicians and rhinolaryngologists in regarding the tonsils and nasal accessory sinuses as the sole or chief sites of infection in the upper respiratory tract, ignoring the fauces and pharynx and particularly the rhinopharynx. Probably in few cases, and possibly in no case, of upper respiratory infection are the infecting organisms confined to the nasal accessory sinuses and the tonsils.

"In cases in which the tonsils *in situ* and the rhinopharynx were cultured simultaneously, the same organism was found on both areas in forty-seven instances, eighty-two organisms growing up on Loffler's blood serum in both, and fifty-six growing up in whole blood in both.

Consequently, the removal of infected tonsils and the cleaning up of an infected accessory nasal sinus never remove from the patient all the infecting organisms."

Dr. Solis-Cohen further concludes, after careful bacteriological investigation that:

1. "Organisms present in the tonsils, nares and accessory nasal sinuses are frequently present simultaneously in the rhinopharynx.

2. "The rhinopharynx in the absence of demonstrable disease may be infected with various organisms that are pathogenic to the patient and which may cause disease in various tissues of the body, thus acting as any other focus of infection.

3. "Recovery from arthritis, neuralgia, cardiac decompensation etc., following the use of a vaccin made chiefly from organisms in the rhinopharynx pathogenic for the patient gives additional evidence as to the site of the focal infection sometimes being in the rhinopharynx.

4. "In searching for a focus of infection that is not apparent, one must not neglect to investigate the rhinopharynx bacteriologically, even in the absence of demonstrable disease there."

In my experience, patients may complain of any of the following symptoms: Dropping in the back of the throat with frequent clearing up of mucous or phlegm. Nasal discharge. Sniffing of the nose. A feeling of fullness in the throat. Secondary symptoms such as laryngitis, middle ear involvement with impairment of hearing. Nasal accent to the voice. Systemic disturbances which result from focal infection. All of

these symptoms do not occur in every case and other conditions may cause any one of these complaints. However, nasopharyngeal adhesions should be considered and looked for as a cause for any of the above mentioned symptoms and frequently the effort will be rewarded. Moreover, there will be fewer disappointments following tonsillectomy.

Allow me to report one case as an example. A boy, ten years of age, who had been operated on for tonsils and adenoids a few months prior to examination. Shortly after operation he began to sniff his nose with a slight nasal discharge. Family doctor who performed the operation advised the mother to whip the boy for the sniffing habit. Upon examination numerous adhesions were found in the vault of the pharynx. With the index finger these adhesions were easily broken up and the post nasal area swabbed with ten per cent silver nitrate. A few days later the boy stopped sniffing his nose, and he did not get whipped. Not many cases are treated so effectively.

The diagnosis of naso-pharyngeal adhesions is made by examination with the laryngeal mirror, the naso-pharyngoscope and by palpation with the index finger. These examinations are best made under local anesthesia.

The treatment of nasopharyngeal adhesions consists, primarily in breaking them up and in removing the cause, and secondarily in preventing their reformation. The index finger is the best instrument. With the patient's head erect, the right index finger is inserted behind the soft palate and passed from the left side of the pharynx to the right. The left finger is then used for the left side. Too much force is liable to tear the mucous membrane or injure the muscles or eustachian tubes. To prevent the reformation of adhesions it is very important to swab the area every two or three days for a few times and even then they are prone to recur. These swabs also help to eliminate the chronic congestion and infection. Of course, secondary involvement or concomitant involvement of the middle ear or other organ should receive proper treatment.

The prevention of pharyngeal adhesions should be considered a very important phase of this subject. Better technic in nasopharyngeal surgery, especially in adenoidectomy should be practiced. Post operative examinations should be encouraged.

In conclusion, the chief purposes of this paper are:

1. To call attention to the frequency of adhesions in the nasopharynx.
2. To suggest a more frequent use of laryngeal mirrors, nasopharyngoscopes and index fingers.
3. To emphasize the need for improved operative technic and postoperative examinations.
4. To elicit a free discussion of this subject, especially from the standpoint of focal infection.

TRAUMATIC PULSATING EXOPHTHALMOS

Report of Four Cases

By Henry L. Sloan, M.D., Charlotte, N. C.

Pulsating exophthalmos is of particular interest to the oculist because of the fact that the responsibility of making the diagnosis is his, as the eye symptoms cause the victim to go first to him; the oculist's advice is also needed constantly in the care of the eye complications. The most complete analysis of recorded cases was made by Locke[1] who analyzed 588 cases. He found that 23.16 per cent were spontaneous, and 76.84 were traumatic, in origin. It is, therefore, most frequently referred to as traumatic pulsating exophthalmos. The usual cause is a blow on the head, either from a fall or a direct blow, producing a fracture of the base of the skull. Rawlings[3] has found that in seventy per cent of fractures of the base of the skull the body of the sphenoid bone is involved. The cavernous sinus is just to the outer side of the sphenoid bone, and as both the sinus and the internal carotid are rather immovable in this region, it is easy to see how these structures are injured. Penetrating wounds, such as gunshot, or stab wound of the orbit, not infrequently give rise to it.

Exophthalmos pulsans is a symptom complex, characterized by three cardinal symptoms, which, named in the order of their appearance, are: bruit, exophthalmos, and pulsation. The bruit is systolic as a rule; it may be faint, or very loud and very depressing to the patient, and is described by the latter as blowing, hissing, roaring, etc. The patient hears it most distinctly when he is in the prone position or bends over. The bruit may be heard with the stethoscope all over the head, but not infrequently it is heard in the forehead or temple and nowhere else. Frequently it can be heard along the course of the vessels of the neck on the same side of the aneurism. It is stopped by pressure on the common carotid on the side of the lesion. The eye-ball is usually pushed outward and tilted so as to cause diplopia. The pulsation is usually felt by pressure over the orbit at the upper and nasal portion; the pulsation may be visible. Pulsation, however, is not always present. Headache is common and sometimes excruciating. The pain in the eyeball is often acute. Vertigo is not uncommon. Altogether, the patient is usually greatly debilitated.

The following conditions may cause pulsating exophthalmos:[2]

1. Rupture of internal carotid in the cavernous sinus;
2. Aneurism of internal carotid in the cavernous sinus;
3. Aneurism of ophthalmic artery both within and without the orbit;
4. Tumors within the orbit, either those in the orbit or protruding into it from neighboring sinuses or from the intracranial cavity.

In a report of fifty autopsies[1] the findings were as follows: Arterio-venous communication, twenty-four; thrombosis of cavernous sinus and ophthalmic vein with probable arterio-venous communication, eight; aneurism of internal carotid artery, four; aneurisms of ophthalmic artery in orbit, two, in outside orbit one, total three; tumors of the orbit, seven; lesions not discovered, four.

The true aneurismal varix predominates in the traumatic cases and should be differentiated by careful study.

The symptoms arise from increased pressure in the cavernous sinus. The exits of the cavernous sinus are the superior ophthalmic vein and the inferior and superior petrosal sinuses. As the latter have firmer walls than the superior ophthalmic vein the arterial current is forced more readily into the vein. This leads to stasis and great dilatation of the walls of the orbital veins and the development of pulsation. This, moreover, leads to dilatation of the veins of the conjunctiva and the lids as well as those of the fundus.

The intimate relationship of the third, fourth, the ophthalmic division of the fifth, and the sixth and seventh and eighth cranial nerves with the cavernous sinus explains why these structures are often damaged. The increased pressure also causes damage to the optic nerve and the retina.

In the sixty-nine cases of the de Schweinitz-Holloway series[4] (all reported except 19) only thirteen retained normal vision; the others had their vision either seriously impaired or were blind.

COMPLICATIONS

Neuro-paralytic keratitis, corneal ulceration and vascularization, opacity and edema of the cornea and striped keratitis; the usual causes of blindness are optic neuritis and optic atrophy; cataract and glaucoma and retinal hemorrhages infrequently.

TREATMENT

A few spontaneous cures have occurred. Other cures have resulted from digital compression of the common carotid. Surgical measures, however, should take precedence over other forms of treatment. The classical operation has been ligation of the common carotid artery on the side of the lesion. Whitham[23] and others of late argue that ligation of the internal carotid artery is more logical. Since 1907 there have been eighty-four patients who have had their common carotid tied for this ailment.[1] Of these, 67.86 per cent were cured or improved, with a 7.14 per cent mortality (since days of asepsis). During the same period, thirty-eight cases have been reported to have had the internal carotid ligated with 87.51 per cent cured or improved, and a 9.37 per cent mortality. So there seems to be very little to choose between these two methods. There is a small series of 13 cases[1] which seem to show that with a thorough course of compression of the common carotid preceding the operation, that ligation of the internal carotid is probably followed by greater number of cures, less recurrences, and possibly fewer deaths.[1] Before ligation of either carotid, compression of the common carotid should be practiced for some time in order to help in the establishment of the collateral circulation in the brain, and it should be noted if compression of the carotid stops the bruit and also if cerebral symptoms threaten.

When ligation of one carotid fails, the dilated superior ophthalmic vein should be dissected out and tied. This is often followed by a cure.

Ligation of both carotids is very dangerous. It is followed by a high mortality.

In conclusion, let me close my general remarks with this very significant observation by de Schweinitz:

"In so far as I have been able to ascertain, all operations which have been performed on the orbit which include ligature and resection of the superior ophthalmic vein, have been successful. It would seem that this procedure should be considered before ligature of the common carotid, with its mortality of ten per cent, and failure of twenty-four per cent, is resorted to, and certainly should precede ligation of the second carotid provided ligation of the first carotid has failed to produce the desired result." De Schweinitz concurs with Gifford in the statement that "if a distended vein can be felt in the orbit it should be the operation of choice."[2]

REPORT OF CASES

Case No. 1: Decima A. Age six and one-half years. White—school. This patient came to my office the first time on January 1, 1923. Her chief complaint was a "swollen left eye." In a few words, her history was that she had been a normal child in every way until she fell while running in the field, and stuck a small weed in the left orbit about six weeks previously. Very soon after left eye became prominent. Since the development of the proptosis she has been very weak and feverish and able to sit up but very little.

At this time the left eye was very prominent and immobile. The orbital tissues were badly swollen and very red, and eye closed. I made a diagnosis of cellulitis, as X-ray reported ethmoids and antrum, left, very cloudy. No bruit or pulsation present at this time. Incision below upper orbital margin nasally. No pus. Patient felt much better after two weeks in hospital. The orbital tissues were much less swollen and eye movements returned in part.

Patient returned March 5, 1923. Vision at this time: ODV: 20/15; OSV: 20/30-2.

She said that she heard a noise "in her throat" for the first time on the morning of February 21, 1923. At this time a loud blowing murmur was distinctly audible, most pronounced in the middle of the forehead, in both temples, at the angles of the jaws, and to a less extent all over the head. Compression of right carotid made bruit worse: compression of left common carotid stopped the murmur. Pupils unequal,—right 4 mm., left 6 m.m.,—but react promptly to light. all convergence lost. Limitation of ocular excursions in all directions. Marked weakness of left superior rectus and left external rectus. Vertical diplopia with red image (red glass before left eye) six inches above white image. Retinal veins, left, slightly distended. No swelling of discs. Marked fullness of orbital and conjunctival veins. No corneal or other complications.

Mother of this patient refused to have child operated.

This patient last seen on January 21, 1927. Her mother reports that the child has been going to school and getting on well in her studies. At this time both eyes were prominent, but left more than right. Patient says she still hears a "noise in her head," but does not complain. The bruit is still present. Limitation of left ocular movements marked in all directions. Left external rectus paralyzed. Eyegrounds show some engorgement of retinal veins. No swelling of discs, no atrophy.

Vision at this time, with correction: ODV 20/20; OSV 20/100. When child gets a cold in the head the left eye gets red and very much swollen.

Case No. 2: M. T. E. Age 27. Express messenger. White. Seen first July 4, 1925.

Chief Complaint: Right eye prominent and right eyeball red for one week.

H. P. I.: Patient says he had no trouble with his eyes until one month ago. Six weeks ago patient was thrown back in an express car by a sudden start of the train. He struck the back of his head and was stunned for a few minutes. Two weeks later he was troubled by a blowing noise in his head when he lay down. Ten days since right eye became red, painful and prominent. He was forced to quit his work as express messenger.

Eye Examination: Vision—ODV 20/20-1; OSV 20/20-1. On July 4, 1925, right eye was prominent, superficial conjunctival veins were enlarged, and the eye was almost immobile. There was a slight fullness of the retinal veins. The pupil was considerably dilated, but reacted to light, accommodation and consensually. The left eye was normal in appearance, and the muscular excursions were normal. The tension was normal in both eyes.

A blowing murmur was heard with the stethoscope over the temples, more especially over the right, over the forehead, and well down in the vessels of the neck on the right side. It was stopped by compression of right common carotid. This murmur had been present for four weeks. It came on two weeks after his accident. Soon after the appearance of the murmur, exophthalmos and pulsation developed in the orbit.

Aug. 10, 1925: Condition remained unchanged.

August 14, 1925: Patient was observed a number of times until this date. There was marked increase in the swelling of the right eye, and bulbar conjunctiva was pouting out through the palpable fissure, dry and swollen. During this last twenty-four hours the patient suffered excruciating pain in the right eye, and there was some tendency to drying of the corneal epithelium, and also suggestion of desquamation below.

August, 15, 1925: On the morning of this date his right internal carotid was ligated by Drs. R. L. and J. W. Gibbon. The internal carotid was exposed and compressed carefully, and stoppage of murmur was noticed. The operation was done without difficulty and the bruit immediately ceased on the table after ligation of the internal carotid.

August 16, 1925: Patient recovered nicely from ether. He has had no discomfort to speak of since the operation. The bruit has ceased together with the pain in the right eye. There is less swelling of the bulbar conjunctiva, and less proptosis. Patient is able to move eye somewhat up and down and internally.

August 17, 1925: Patient had another good night, and feels much better this morning. There is much less swelling of the bulbar conjunctiva, and less proptosis. Patient is beginning to regain extraocular movements. He has suffered very little, if any, since operation.

This patient has continued well. The right eye is still a little prominent. He has no bruit or other eye trouble, and has been able to take up his work again as express messenger.

Vision: 20/20, right and left.

Case No. 3: Naomi D. Age 70. Colored Woman. Midwife. Seen first April 20, 1925.

C. C.: Severe pain and poor vision in right eye; prominent right eye.

Present H.: Patient has always enjoyed splendid health.

H. P. I.: Patient says her eye became prominent in November, 1924. Previous to this in December, 1923, she stepped off a porch in the dark, fell two feet and struck her right temple. She was unconscious for a few minutes. Soon after the exophthalmos appeared. About the same time she heard a blowing noise in her head, which she ceased to hear about sixty days before she consulted me. Her vision failed in December, 1924. Recently she has had diplopia; one object is above the other.

The right eye is getting more prominent all the time, patient says.

Vision: ODV 20/40; OSV 20/30.

With correction: ODV 20/30; OSV 20/20.

Right eye was proptosed. Conjunctival and orbital veins full, and tortuous. Marked limitation of right eye to right. With stethoscope a distinct bruit is heard, over forehead, but no other place. Slight pulsation felt over right eye.

Ophthalmoscopic examination shows the right retinal veins are full and tortuous. Very slight retinal arterio-sclerosis.

In a communication from this patient February 6, 1927, she says that her eyesight is unchanged and that she has been able to do her house work and is carrying on her work as a mid-wife.

On account of this patient's age, and the mild form of her trouble, I did not think an operation advisable.

Case No. 4: H. M. E. Age 47. White. Laurinburg, N. C.

C. C.: Left swollen and red and painful

Patient's Family History: Negative. Has always had good health until February 1, 1923, when he was knocked down in the street by an automobile. He was unconscious for a short while and was not altogether himself for forty-eight hours. Vomited several times. He bled from ears, nose and mouth. Pulse has been as slow as forty-five, now sixty. Pulse usually seventy to eighty-five. Has considerable soreness over left mastoid region. Left facial paralysis came on eight days after accident. Hearing in left ear is bad and left ear feels stopped up.

Patient says he has had very little vision in left eye since he stuck a thorn in this eye in infancy. He says he feels well enough now except dizziness and pain over left frontal and left mastoid regions.

Physical Examination: He has a bruise of left mastoid region. Left facial paralysis not complete. Some edema over left temporal and left frontal regions.

X-ray skiogram shows a linear fracture extending obliquely up from base of mastoid, at lower end, takes a course across base of mastoid, evidently across tympanum to posterior portion of temporal bone to foramen magnum. No depressed fracture or blood clot.

Eye Examination: OD normal in appearance. OS left eyelids badly swollen and blue, marked bulbar chemosis and swelling of orbital tissues. Motion of left eyeball very limited.

Pupils equal and react normally to light.

Eyegrounds normal in appearance.

Left eye aphakic—left corneal macula.

In spite of rest in bed and hot applications left exophthalmus became more marked.

One week after admission patient sat up in bed. Something seemed to snap in his head and he heard for the first time a blowing noise in his head. This murmur could be heard all over the head with the stethoscope, but was heard loudest over forehead and left ant. temporal area. About this time both visible and palpable pulsation developed at upper inner side of orbit. A diagnosis of arterio-venous aneurism was made (between internal carotid and cavernous sinus). Compression of common carotid was done t. i. d. for one-half to one hour. Protrusion of eyeball grew worse, and became extreme. Patient suffered a good deal from headache, pain in left eyeball, and dizziness. He was quite incapacitated. Ulceration of left cornea developed.

Operation was advised.

Dr. Addison Brenizer tied the left external and left internal carotids. Patient had an uninterrupted convalescence. All of his symptoms cleared up. Patient is well today and has been carrying on as a merchant up to present time; he resumed his work about two months after operation.

Present Vision: ODV (with correction) 20/20. OSV hand movements 1 foot.

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DISCUSSION

Dr. Frank C. Smith, Durham: Fortunately this condition, so distressing, is not so common, but today a combination of automobiles and hard pavements is one of the principal causes, and we may expect to see it a little more often. In the traumatic cases you will notice that in the cases reported the age varies from six and a half years to seventy years. It may occur at any age. In idiopathic cases it usually occurs after the age of thirty, due to the fact that there is a vascular condition.

The history of the first case is quite misleading. From getting a weed in the eye you would not expect a fracture. Another peculiar point is that the symptoms did not develop for thirteen weeks. There are two types of cases, one in which the symptoms develop within twenty-four hours, and another, in which they may not develop for several months, and cellulitis may develop here. If they have not the bruit the picture is misleading; and if they have not cellulitis it is easy to make a mistake, particularly when the history is such as this. At this point in some cases pressure backward on the eye, increasing the venous pressure, may bring forward the pulsation or cause the bruit to be heard. The position of the eyeball may cause suspicion; it may be pushed downward and for-

ward. At this point sometimes a thrill may be felt. This case was not operated on. What are the patient's chances? One of the other cases was not operated on. The chance, so far as life is concerned, is good. Few patients die from the condition itself. The traumatic cases usually die from repeated intracranial hemorrhages, and the idiopathic cases usually die from some vascular disease of the intracranial vessels, such as apoplexy.

Now, would decompression do any good in these cases? The cases that have been reported cured I believe have been of the idiopathic type, that is, the type in which there is a vascular disease previously, with thinning of the walls and more favorable chances for blood-clotting. In the traumatic cases you have perfectly normal cases with a smooth internal coat everywhere except at the point of eruption. The cases that I have seen are few. I saw one several times which had refused operation and had very much the same history as in this case. She was bothered somewhat, but not a great deal. The other case was a man thirty years old who was knocked down by an automobile. He was taken to a hospital, and it was thought he was doing well. It was some two months afterwards, as I recall, that he came over to the Wills Eye Hospital with this trouble.

As to the vision in these cases, the vision was not greatly menaced except in the first case, I believe. The cases reported by de Schweinitz show a great diminution in the great majority of cases, but I do not believe that is true.

I think the point of ligating and resecting the vein in the eye which is swollen, if it can be found, is extremely important. There has been one death from that, due to thrombosis.

Dr. V. M. Hicks, Raleigh: In the first place, I think we are all agreed that these cases are unusual in our practice. At the same time, I have had the pleasure of seeing a number of them in my experience at the New York Eye and Ear Infirmary. Undoubtedly the method of election is the ligation, as described by Dr. Sloan. In some of these cases, however, this procedure is not consented to by the relatives or by the patient, and palliative measures become necessary. One of the important things in the treatment of the cases in which ligation is not permitted is the case of the cornea, because if the cornea breaks down ultimately a rupture will occur, and you will get an atrophic globe. I think the wisest procedure in this type of case is a suturing of the lids after the method of Wheeler, three or four places on the lids being selected for scarification or excision of a small portion of the margin, the lids being brought together. By this method the globe is kept covered. Of course, one can dress these cases with an antiseptic ointment, but that becomes rather tiresome to both patient and physician. I recall that this procedure was resorted to in two cases with fairly satisfactory results.

Dr. Sloan, closing the discussion: I hardly believe in that first case there was a fracture. I think the penetrating body injured the wall of the artery and under pressure of the arterial pulse it gave way.

I have here a little clamp that is used in the Peter Bent Brigham Hospital. They apply this clamp and leave it on for twenty-four hours. Then, if there is no evidence of cerebral disorder, they ligate the artery.

There is also a clamp used by Matas in the form of a collar around the neck, which can be tightened and pressure applied over the carotid arteries.

CORNEOSCLERAL TREPHINING (ELLIOTT'S OPERATION)

By James M. Parrott, M.D., F.A.C.S., Kinston, N. C.

A great deal has been written about glaucoma. The various terms which have been and are still frequently used are more or less confusing. This is not surprising because the disease or the disease entity which is known as glaucoma is but little understood. For my own convenience, but claiming no originality, I classify glaucoma about as follows, recognizing, however, that the classification is more or less imperfect.

I usually think of two general groups: (1) Primary glaucoma and (2) secondary glaucoma. I divide primary glaucoma in two classes: (a) Inflammatory and (b) simple. I subdivide inflammatory into two classes: (a) Acute and (b) chronic. Secondary glaucoma may also be acute and chronic. However, this type is but little seen except in that variety which is due to intraocular tumors—this is not true glaucoma.

I make these preliminary remarks in order that I may be better understood later and I now pass immediately to the discussion of the subject of my thesis.

INDICATIONS

Elliott's operation can be done with reasonable hope of fair success for any condition indicating an iridectomy and for several classes of cases in which an iridectomy should or could not be done; however, except in the groups hereinafter mentioned iridectomy, in my judgment, is the operation of election. My contention is that corneoscleral trephining is the most desirable of all the operations which have been offered as a substitute for iridectomy and it is our best hope in the treatment of the following conditions:

First. In the late stages of chronic inflammatory glaucoma in which the field of vision is very much contracted showing a progressive and extensive atrophy of the optic nerve fibers. In such cases an iridectomy may really be more detrimental than beneficial because the center of the vision might be entirely lost.

Second. So called chronic painful eye. (Chronic Irido Cyclitis), with or without increased tension and with a very shallow anterior chamber.

Third. Simple glaucoma. These cases are very discouraging. The sight is ultimately lost regardless of whatever treatment may be pursued. The Elliott's operation is the best thing we have to offer at this time for this condition.

Fourth. In any case in which an iridectomy has already been done and has failed to relieve the pain. The increased tension in acute inflammatory glaucoma is probably due to an obstruction of Shlemm's canal. An iridectomy gives amelioration by relieving the obstruction in the canal of Shlemm provided the iris roots are thoroughly removed. When an iridectomy fails to give relief in these cases the failure is probably due to incomplete detachment of the iris. If an iridectomy has been

done and failure results, then Elliott's operation may be of service and should be considered.

Fifth. Secondary glaucoma due to the dislocation or swelling of the lens. In this condition a paracentesis should be performed one or two or three times, if needed and miotics, used together with hot applications, free purgation, rest in bed in order to reduce the tension as much as possible before doing the trephining. If the tension is exceedingly high there is special and increased danger of intraocular or expulsive hemorrhage and loss of vitrious after any operation except a paracentesis. This applies to secondary glaucoma which I am now discussing with as much force as when found in any other condition. However, when such an eye has an unusually high tension with practically no anterior chamber in nearly every instance it has to be enucleated, but before doing so it is always a conservatively valuable thing to practice trephining before removing the eye—a case of "all to gain and nothing to lose."

Sixth. Elliott's operation should be tried before enucleation of the eye, in absolute inflammatory glaucoma with atrophy of the iris. Once in a great while it is a success and then by its use enucleation is avoided. It does not improve the vision in such cases and certainly is not done for that purpose.

Seventh. The most decided and really the most striking field of usefulness for Elliott's operation is in the late stages of chronic inflammatory glaucoma. The obstruction of the spaces of Fontana entirely around the circumference of the cornea is probably the cause of chronic glaucoma. In these cases the iris is adherent to the posterior surface of the cornea and an iridectomy simply tears the iris off close to the roots but does not relieve the obstruction. Theoretically and practically Elliott's operation should and does give much better results in this condition than does a simple iridectomy. Of course I am not speaking from my own experience when I say that cutting the pectinate ligament during an iridectomy gives relief in chronic glaucoma. I am simply citing the usually accepted statements. We all know that only a small proportion of chronic inflammatory glaucomas are benefited by an iridectomy.

Eighth. Secondary glaucoma caused by an ecstatic scar with no light penetration is said to be a condition in which Elliott's operation is better than an iridectomy. The theory probably being that an intra ocular or even an expulsive hemorrhage is more apt to develop after an iridectomy than its substitute. Especially is this true when there is a decided increase in the tension.

Resume. By way of summary it may be stated that corneoscleral trephining is indicated in all cases demanding a posterior sclerotomy, LaGrange operation, or any other substitute for iridectomy.

OPERATION

Since the operation is fully described in practically every text book on opthalmology, I will not take up your time to discuss it. Suffice it to say that I follow the classical description as given by Elliott.

COMMENTS

I now quote from the paper which I prepared two or three years ago. I see no reasons for changing my views.

"*First Stage.* In making the conjunctival and corneal flap one should be careful to make the corneal split at the center of the area of conjunctival elevation; that the corneal flap need not be over 5mm long and one to 2mm wide—1 1/2mm better. The conjunctival flap should be several mm longer than it is often made. I think this is a matter of importance. If the conjunctival flap is too short the danger of late infection is markedly increased.

"*Second Stage.* The trephining should be done with a 2mm trephine as suggested by Elliott and not with a 1mm trephine as suggested by Knapp. A 1mm trephine increases the difficulty of the iridectomy and I am just a little afraid that it would provide insufficient drainage. I do not believe that it is of any theoretical or practical advantage in lowering the risk of post operative infection. The trephine should be placed with a deal of accuracy as nearly as possible exactly half on the sclera and half on the cornea. If this precaution is heeded and the proper care exercised in handling the trephine several operative complications such as loss of the vitrious on the one hand or injury to the uveal tract on the other would be avoided to a great extent.

"*Third Stage.* Iridectomy should be done with sharp scissors after carefully and fixedly grasping and withdrawing the scleral-iris plug. The pillars of the iris usually retract even if the coloboma is incomplete. If they do not they can be carefully and easily replaced with a spatula. This is a matter of importance just as it is to carefully replace the pillars after an ordinary iridectomy. If the coloboma is not complete the effectiveness of the operation is not reduced at all. The main thing is to remove the roots of the iris.

"*Fourth Stage.* After the iridectomy the conjunctiva should be replaced with exactness and the lid carefully elevated while closing. A suture in the conjunctiva is unnecessary. One drop of one per cent solution of atropine should be inserted in the corner of the eye just as it is closed. I think it especially important that both eyes be bandaged and kept that way three or four days. I do not think the first dressing should be removed within forty-eight hours."

CAUTIONS

(a) Care should be taken to bare the sclera. This renders trephining much easier. A small amount of conjunctiva left on the sclera will prevent an otherwise "perfect day."

(b) If the trephine is badly placed either too far forward or too far backward it may damage the flap and make an iridectomy impossible because of the recession of the ciliary body.

(c) A small cotton sponge dampened in a one to 5,000 adrenalin and squeezed dry should be used to wipe down the conjunctival flap especially at the limbus, to control a little hemorrhage which develops at that point and to make it easier to see the cornea.

(d) Special care should be taken to prevent buttonholing the flap. If such a misfortune should happen in my opinion if the hole is closer than four to five mm to the cornea, it is wiser to replace the flap and postpone the operation and do it later at another point on the eyeball. If one exercises reasonable care in hugging the sclera closely and in beginning the splitting of the cornea there is no excuse for making a hole in the flap.

(e) One should exercise particular care in handling the trephine so as not to enter the posterior chamber. This can be avoided by gentleness, previous practice and carefully inclining, however slightly, the trephine downward so as not to cut through the sclera too quickly and by taking great pains to hold the trephine in the initial defined groove and further, particularly remembering that the trephine rather quickly cuts through. Just as soon as a substantial sucking feeling is experienced the trephine should be removed.

(f) Certain authorities caution against entering the anterior chamber "with an iris forceps" the fear being that the lense may be damaged or loss of vitrious may be experienced.

(g) Another caution to which authorities refer and with apparent wisdom is that the pupil if dilated too much would prolapse its pupillary margin into the wound thus making an essential iridectomy impossible or impractical.

(h) Always reduce an excessive tension on a very hard eye by paracentesis, miotics, or even posterior sclerotomy, before using a trephine, to reduce the risk of expulsive hemorrhage or the loss of intraocular contents.

For fear that I may be misunderstood I run the risk of tiring you by stating that I do not think an Elliott's operation should be done in any case where an iridectomy is positively indicated. My view is that an iridectomy is the operation of election. I believe, however, that of all the substitutes which have been offered for iridectomy, corneoscleral trephining is far and away the best. I would not be true to my own convictions if I did not close by briefly stating that I do not mean to advocate iridectomy or any of its substitutes in cases where a simple paracentesis with medical treatment will offer a reasonable hope for relief, nor do I mean to say that all cases should be first given the simpler treatment and then followed by an operation if they fail. Many cases should be operated by some measure as soon as the diagnosis can be made.

FRONTAL AND ETHMOID SINUSITIS WITH ORBITAL COMPLICATIONS

By F. E. Motley, M.D., Charlotte, N. C.

The most common complication of suppurative ethmoid and frontal sinusitis is orbital cellulitis and abscess, although in proportion to the total number of cases of nasal sinusitis encountered, the incidence of cellulitis and abscess of the orbit is rare, actually occurring in about one out of every hundred cases of accessory sinus empyema.[1]

ANATOMY

A few points in the development and anatomy should be kept in mind in considering this subject. The lamina papyracea of the ethmoid, and the lacrimal bone are the thinnest of all the orbital walls. The periorbita, or periosteum lining the orbit, is extremely thin. The orbit is surrounded by the accessory sinuses except on the temporal side, the sphenoid sinus being the only one that does not form a part of the bony orbital wall. There is a rich vascular anastomosis between the nasal sinuses and the orbit. All of the sinuses except the frontal are present at birth, the frontal developing at some time varying from the fifth to the tenth year, all the sinuses reaching their maximum development in the late adolescent period.

PATHOLOGY

In the formation of orbital abscess the infection may spread from the nasal sinuses by continuity or by way of the venous or lymph circulation.

The opinion as to the percentage of orbital complications due to the direct spread of the infection through a dehiscence in the lamina papyracea varies greatly. Some authors give this as a factor of great importance, others state it plays but a small part.

The infection may travel from the diseased sinus mucous membrane through the os planum or through the lacrimal bone, traveling through the Haversian canals, attacking the orbital periosteum and thence to the orbital contents. If a direct opening exists through the bony wall the infection spreads with greater ease and even shorter time. The venous drainage from the nasal sinuses to the orbit predisposes to transmission of infection to the orbital cavity from the nasal sinuses. Dr. A. C. Jones states that the fulminating character of acute ethmoiditis which breaks through into the orbit has led him to the belief that there may be a chemical action produced by bacterial growth and that the production of gas by these bacteria growing under almost anaerobic conditions (due to the swelling of the mucosa) forces the infection through the bony dehiscences or ruptures the thin diseased bony wall, spreading the infection rapidly in the loose orbital tissues. [2 3]

That the majority of these cases occur in children, as practically all writers agree, is due to several factors:

1. The greater frequency of hehiscences in the bony wall.
2. The greater amount of swelling taking place in the mucous membrane of the turbinates (due to the lack of firm fibrous connective tissue in the turbinates), and hence block off the drainage from the ethmoid and frontal sinuses.
3. Because of the lack of immunity of these infections in children.[4]

The possibilities of more serious infection than that of the orbit alone must be borne constantly in mind. The ethmoid and frontal sinus infection may travel through the posterior bony wall by way of the lymphatics through the dura and over the frontal lobe of the brain. Some of the ethmoid veins drain to the cranial cavity and the thrombosis may extend by venous extension, not only to the brain, but may also be carried to different parts by metastasis, septicemia resulting.

Andre and Falcome, experimental workers, have proved that infection may be carried through direct lymph channels existing between the mucosa of the sinuses and the meningeal spaces.

If the infection spreads along the sheath of the optic nerve, it will quickly penetrate the cranium, or it may be carried by way of the ophthalmic veins to the cavernous sinus.

In certain localities, a great number of these orbital cellulitis and abscess cases are due to sinus infection occurring after swimming and diving. The number of bacteria present in the water is an important etiologic factor, but there is also the fact to be considered that both general and local tissue resistance is lowered, and the subsequent invasion of bacteria already present in the nose is made easier.[5]

SIGNS AND SYMPTOMS AT DIFFERENT STAGES—WITH TREATMENT

Most of these patients give a history of nasal blocking and coryza which is often so slight that only close questioning can elicit any complaint of this. Some of these patients give a history of swimming and diving previous to their coryza. The onset of the orbital swelling is usually sudden, the patient may awake with a slight swelling of the eye lids, redness of the conjunctiva, the onset of the orbital symptoms occurring from a few days to a week after the beginning of the rhinitis. There may or may not be a discharge from the nose, depending upon whether the swelling of the turbinates and mucosa close off the sinus ostia. At this early stage the progress of the swelling may be arrested by shrinking of the mucosa of the nose followed by free use of warm mineral oil to the nose, iced application to the affected eye, and general supportive treatment, such as: forced fluids, catharsis and rest in bed.

If the disease goes on to the second stage there is some protrusion of the eye, swelling of the lids, purulent discharge from the nose, general malaise and temperature increase and usually a rather severe headache. An intranasal ethmoidectomy after the removal of the middle turbinate on the affected side will at times suffice to reduce the swelling and in a few days relieve these symptoms.

Should the cellulitis and swelling go on to abscess formation, there is presented a typical picture of limited ocular movement, edema of the lids, chemosis of the conjunctiva, exophthalmos, diplopia and some times reduction of visual acuity, due to optic nerve pressure. The nasal mucosa and inferior and middle turbinates on the affected side are very much swollen and reddened, and at times pus can be demonstrated in the nose. X-ray is valuable help.

At this last stage only by external operation can the pathology be definitely ascertained and adequate drainage established for both the orbit and nasal sinuses. Dr. Skillern, who in most instances favors intranasal ethmoidectomy, states that the external method as a primary operation is indicated when pointing or actual rupture into the orbit takes place.[6]

PROGNOSIS

Prognosis in these cases is often rather serious,—Yerger, reporting from the Illinois Eye and Ear Infirmary records, states that seventeen

per cent of these cases of orbital phlegmon, secondary to purulent and ethmoid sinusitis, died from meningitis, brain abscess or cavernous sinus thrombosis. Twenty per cent are followed by blindness due to mechanical pressure of the abscess.

The four case reports following are of interest because they show various situations that may arise. In each instance an external frontal of the Lynch type was done, with complete exenteration of the ethmoid and removal of the anterior sphenoid wall. Pus under pressure, necrotic bone, and polypoid mucous membrane were found in all. The X-rays taken showed clouding of the affected sinuses and loss of bony detail. The incisions were closed in each patient with the exception of one, (which is mentioned in detail later) and resulting scars were small and soon became unnoticeable.

Case 1: Girl, 12 years old. There is a history of advanced diabetes, for which she has been under rigid treatment for some time. Her present trouble came on shortly after an acute coryza following swimming. She came in with a typical advanced orbital abscess and ruptured purulent ethmoiditis. Urinalysis showed sugar, acetone and diacetic acid. An internist took charge of this phase of her treatment and after revision of her diet and the use of insulin, an external operation was done, the patient being discharged in three weeks time, although she remains under constant care in regard to her diabetic condition.

Case 2: Boy, 14 years old. Admitted with typical signs and symptoms of advanced orbital abscess with ruptured ethmoiditis following an attack of grippe two weeks previous. An interesting and, to us, an alarming sign was a slow pulse, at times as low as fifty-five or sixty with temperature of one hundred and three. Careful neurological and spinal fluid examination demonstrated no abnormal findings. Although the ethmoid was necrotic, the posterior frontal plate and cribiform were found intact and no lead was found that would point directly to an intracranial condition. After repeated and close questioning, a history was obtained from the father of this boy, that at previous examination by other physicians several years ago, an abnormally slow pulse was found and commented upon at that time. During his stay of ten days in the hospital and at several subsequent office visits the pulse has remained between sixty and seventy, occasionally as low as fifty-five. His eye is now normal and he has been free from nose complaints for four months.

Case 3: Girl, 12 years old.

History: A few days after the onset of acute coryza which began ten days previous to admission there was swelling of the eye. Swelling increased rapidly.

Examination: Tenderness over right frontal and ethmoid region. There was very marked protrusion of the eye and the chemosis of the conjunctiva was so advanced that there were large folds of conjunctiva hanging over the lower lid. The usual external operation was done and in this case it was easy to demonstrate the thrombosed blood vessels throughout the ethmoid and frontal sinus region.

The patient was discharged home in ten days.

Case 4: Boy, 10 years old.

History: Slight nasal discharge for the last six months. Has been swimming practically every day throughout the summer. Swelling and redness of the left orbit one week previous to admission.

Examination: Admission temperature 102. Edema and congestion of the left orbit. Protrusion of the eye out and down. Chemosis of the conjunctiva. The mucosa and turbinates on the left were markedly engorged, and a large quantity of muco-pus seen in the middle fossa. Pulse varying, at times slow. Urinalysis heavy trace of albumin with casts and red blood cells.

Operation: Two days after admission under ether anesthesia a Lynch frontal operation with complete removal of the ethmoid and opening of the sphenoid sinus was done. Pus, necrotic tissue and bone was found throughout. The inner plate of the frontal sinus was intact, dura was not exposed. Spinal puncture at operation showed one hundred cells, mostly polymorphonuclears, and cocci free in the spinal fluid.

Three weeks later was discharged home after a rather slow convalescence. Repeated spinal puncture during this interval showed gradual lessening of the cell count down to normal. The nose was in good condition. Two weeks after this, he came in with a slight swelling in the center of the forehead with pus draining through a tiny fistula in the incision. X-ray showed a definite area of osteomyelitis in the frontal bone.

Second Operation: Under ether anesthesia a sequestrum the size of a fifty cent piece was removed from the frontal bone. The outer plate of the skull was removed for a considerable distance around this, but the inner plate was apparently intact and not removed. The wound was left open for exposure to sunlight. Ten days after the second operation the patient's local condition had progressed well, the bone was covered with firm granulations, there was no pus and no temperature. Nausea and vomiting was present in the last few days. Spinal fluid taken on several occasions showed a cell count of not over five at any examination with albumin and globulin negative. Eye examination showed two and one-half diopters choked discs, with no change in the visual field other than enlarged blind spot.

Third Operation; First Stage: Decompression. The central part of the frontal bone was removed exposing dura over area of one and one-half inches. Dura painted with iodin and wound packed with iodoform gauze.

Second Stage: The pulse was sixty and of poor quality. There was three diopters choking of the discs. The patient complained of severe pain in the head. Spinal puncture showed the fluid to be under but little pressure and cell count of three, with albumin and globulin negative. Having allowed two days for walling off, under ether anesthesia pus was found with a needle one centimeter beneath the cortex on the tip of the right frontal lobe. A crucial incision was made through the dura on the right, and the flaps turned back. The Mosher copper wire brain drain was placed inside the abscess, which had distinct limiting membrane, and the drain anchored with sutures to both dura and skin. Loose iodoform gauze packing was placed around the drain. About one ounce of thick creamy pus was evacuated from the abscess. Smear and culture showed staphylococcus.

There was rapid convalescence. Dressings were done daily and at several times granulations were curetted from the wire basket. The choked discs subsided slowly. The wire basket was slowly extruded and removed after two weeks with a small amount of brain tissue herniating. Repeated spinal punctures were done and magnesium sulphate given for dehydration to reduce intracranial pressure. The hernia rapidly receded.

Three months from the time the patient was first seen he was discharged home. Since his discharge from the hospital he has reported in for examination every month for the last four months and is free from complaints and has been carrying on the usual activities of a boy's life.

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DISCUSSION

Dr. J. P. Matheson, Charlotte: I want to emphasize some of the points Dr. Motley brought out. One of them is that in these young children with acute swelling of the eyes and with acute cold ordinarily local treatment with some astringent spray will suffice. Of course, this group forms the majority of the cases we see. These cases usually come to the eye man. The second class is those with a history of a cold from swimming a week or two previously, with reddening, swelling, and fever. For these use rest in bed and an astringent spray. After opening up the anterior ethmoidal cells these patients are usually relieved very promptly. In the third class, where there is a definite orbital abscess formed, Dr. Motley thinks (and I concur in his opinion) nothing but the most radical surgery will make these cases safe and cure them. External operation is certainly the operation to be followed in these cases and not intranasal surgery, with complete removal of all ethmoid cells and taking off the base of the sphenoid. In most cases you are compelled to do an intranasal antrum, because the antrum is usually filled up with pus. While ordinarily you would not do an intranasal antrum, in this long, bad operation, you have to do it. Why these cases are becoming more frequent I do not know. In the last few months I have seen four cases; also, Dr. Sloan had a fifth case in a young child. While we could not report it as a case at that age, the child being three months old, yet I think it was one. The tissue is devitalized, and there is thrombophlebitis of all the veins, and they are all potentially dangerous cases. I think the main point to be considered is that these people, when the abscess has formed, should have a thorough external operation and no intranasal surgery.

Dr. V. M. Hicks, Raleigh, N. C.: I appreciate very thoroughly Dr. Motley's paper. Inflammatory reactions in the eye are rather common, secondary to primary focus in the ethmoid cells. In a condition such as

angular conjunctivitis, where only the nasal portion of the conjunctiva is involved, the infection apparently has originated in the nose; and treatment of the nasal mucous membrane is of considerable help. When the nasal infection is more posterior, involving the posterior ethmoid cells and the sphenoid sinus, we are dealing with a much more serious state of affairs, because the optic nerve, very commonly, becomes involved. Anomalous variations from the normal structure are rather frequently found, and through these the inflammatory process seems to have easy access to the optic nerve. I think this variation in anatomical structure accounts for the fact that we frequently see cases of chronic ethmoiditis which have existed for years with no affection of the optic nerve; whereas in other cases the optic nerve becomes involved almost immediately. These latter cases are very acute, so much so that the patient often becomes blind within a week. It is a type of case in which operative interference is required at once. Palliative measures are disastrous. It seems, however, that the inflammatory process is not productive of pus. The nasal side of the infection is sealed off, and the process spreads inward in such a way that the optic nerve, incased so closely in its bony canal as it is, is very promptly destroyed. I plead for the most radical surgical interference. Nothing else is of value. It is unfortunate that the nose and throat men, except in certain instances, have failed to realize the importance of this procedure. I have known of instances where the rhinologist refused to operate because there was not sufficient nasal manifestation of infection and the patient remained permanently blind. The result following an operation is most happy.

JOINT MEETINGS

OF THE

SECTION ON PEDIACTRICS

AND THE

SECTION ON EYE, EAR, NOSE, AND THROAT

Dr. Spencer P. Bass, Chairman Pediatrics

Dr. John B. Wright, Chairman Eye, Ear, Nose and Throat

MASTOID INFECTIONS IN INFANTS AND YOUNG CHILDREN

By David R. Sloan, M.D., Wilmington

Surgical mastoid conditions existing in infants and young children in the absence of frank localized symptoms were not recognized prior to four or five years ago. The reason for this was explained on anatomical grounds. In infants and young children the auditory mechanism so far as this paper is concerned consists of an eustachian tube, a middle ear cavity, an aditus, an antrum and a single-celled mastoid antrum. As a rule no mastoid cells are developed in children under two years of age. Because of the above anatomical condition it was thought four or five years ago that middle ear infections complicated by mastoid involvements cleared spontaneously. The drainage from the mastoid antrum through the aditus, through the middle ear, through the short horizontally placed eustachian tube in infants made a surgical mastoid rare. Recent work (done by the pediatric and otolaryngological staff of St. Louis Children's Hospital) has shown that the above idea is an erroneous one. The epitympanic cavity in infants and young children is filled with soft myxomatous tissue folds which prevent free communication between the hypotympanum and the aditus when the swelling incident to infection occurs. Hence the mastoid antrum becomes a sealed cavity and is drained by surgery alone.

It is now known that two types of surgical mastoiditis occur in infants and young children. The first is the condition that is seen complicating upper respiratory infections, la grippe, measles, etc. The major signs and symptoms are referable to the auditory mechanism of the child alone. The second type is that type which occurs in athreptic children and is characterized by severe gastro-intestinal symptoms, diarrhea, nausea, vomiting, rapid loss of weight and dehydration. The first type as a rule begins with an upper respiratory infection, high temperature, soon followed by an acute purulent otitis media which, when opened or when it ruptures spontaneously, discharges pus profusely and is accompanied by high leukocytosis (15,000-56,000) but is without severe constitutional symptoms in the beginning. The temperature abates for a number of hours during the day, and the child appears well except when the temperature is high. This type of case drains freely for a number

of days apparently improving and then within a few days the same symptoms return. This is continued for days or weeks. Finally the symptoms attending any toxemia appear. On examination of the ear the drum is as a rule found bulging, thickened and discolored and there is a sagging of the posterior-superior canal wall. When this is present and the condition of the child shows that he is losing ground, it is time to operate regardless of the number of days the ear condition has existed.

The second or pediatric type of mastoiditis is that occurring in athreptic malnourished infants and young children with all signs pointing to a disease condition present other than in the mastoid cavity. These children have from four to twenty stools a day. Nausea is very pronounced. In spite of the fact that fluids are given other than by the mouth the child will within twelve hours after receiving fluids appear to be absolutely washed out. The skin is wrinkly and can be picked up in handfuls. Fever and leukocytosis are present. When the ear of the child is examined there is as a rule a slight discharge of pus in his external canal. The drum membrane is not full and bulging but only slightly discolored. There is present a sagging of the posterior-superior canal wall. If this drum has not been previously opened, when opened is not accompanied by a free profuse discharge of pus. The history of this type of case in the beginning is not very clear. Those that we have seen have been treated for days and sometimes weeks prior to coming under our observation. That there has been an unobserved middle ear abscess present may be true. Dr. Arthur M. Alden has demonstrated the fact that the tympanic cavity of an infant or young child may be full of purulent secretion and yet reveal no drum changes to indicate this. In the baby the short broad horizontal tube allows for spontaneous drainage from the middle ear into the naso-pharynx and hence prevents the redness and bulging seen as a result of tension. He has demonstrated by means of the naso-pharyngoscope a stream of pus from the pharyngeal orifice of the eustachian tube in several babies whose drums showed no bulging or redness and in which incision revealed free pus in the tympanic cavity. Dr. Jeams describes the pediatric feature of this condition as follows:

"The symptoms in general consist of a marked and rapid loss of weight, fever, diarrhea, dehydration, and the appearance of intoxication. The intoxication is characterized by drowsiness or stupor and pallor with a grayish hue; it may appear simultaneously with the fever or follow it in a few hours. The temperature curve is inconstant. When fever existed previously, a secondary increase may occur. Diarrhea usually parallels and coincides with the dehydration and weight loss. Sometimes the onset of the diarrhea is slightly delayed, and in a few otherwise typical cases diarrhea has been absent. Usually there are from eight to twenty mucous-containing foul smelling stools daily. The dehydration is reflected in the weight loss and the loss of skin elasticity; it is sometimes of such a marked degree as to cause the appearance of extreme emaciation. Prior to the establishment of drainage from the site of infection, parenterally administered fluid is often reflected in an increase in the diarrhea. The leukocyte count has varied from 13,000 to 30,000 or more. Vomiting may occur throughout the course of the illness with varying degrees of severity. Refusal of food is a fairly constant feature. Marked degree of aci-

dosis, as measured by the carbon dioxide combining power of the plasma, have been noted. The urine may at times contain casts and slight amounts of albumin; glucose has not been found."

Dr. Marriott's explanation for these symptoms is as follows:

"It seems probable that the symptoms are the result of a streptococcus toxin and that this toxin acts by damaging the capillaries. The toxins of other streptococci, such as scarlet fever streptococcus, act on the capillaries of the skin and of the renal glomeruli. In infants the gastro-intestinal tract is the seat of much greater activity than in older children and it seems that the toxin affects the capillaries more in this portion of the body than elsewhere. The capillaries of the skin surface are definitely constricted in these infants and abnormal in shape. Laying aside the theory of the possible mechanism of these infections in bringing about the symptoms, the fact remains that such infections are constantly associated with the condition under discussion and that the most hopeful method we have yet found consists of dealing promptly with the infections."

Dr. Maurice Renaud has made the following statement concerning these conditions:

"During the months of August and September, 1921, the middle ear and mastoid antra were examined in seventy consecutive autopsies on infants that had died from athrepsia and infantile diarrhea. In all of them extensive suppuration in the middle ear and mastoid antra was found. Thirty cases had been diagnosed as otitis media during life. The forty others had been overlooked. The final diagnosis in most of the cases was infantile diarrhea. The clinical course of these infants was that of progressive athrepsia with vomiting, diarrhea, final cachexia and death. The pathological finding in these cases, as far as the digestive tract went, was generally negative except in certain case for hyperplasia of the lymphoid tissue. Pus infection of the middle ear and mastoid antra was found in all cases. In four-fifths of the cases the lesions were bilateral. The ear drums were usually thickened and red, though in many cases they appeared normal."

In an analysis of forty of our cases operated on under local anesthesia, twenty-two were of the true mastoid type and eighteen of the gastro-intestinal or pediatric type. The findings in the twenty-two of this mastoid type whose ages were from 8 weeks to 2 years were as follows:

Discharge from middle ears varied. There was present a full middle ear always. Sagging of post-superior canal was present. Only three of these twenty-two cases showed typical local signs, redness, swelling and sub-periosteal abscesses. These cases all appeared less sick than those without local signs. There were seventeen double and five single mastoids done in the twenty-two cases. The mastoid antra were full of pus and granulations in all of these cases. Cultures from the mastoid antra were reported as follows: H. Strept. twelve; non H. Strept. and Staph. five; Staph. four; Neg. one. Three died, nineteen recovered. All these cases were under close observation for from five days to months prior to operation. The drum was incised from three to numerous times. In most instances adenoids were removed. They were also under observation of an excellent pediatrician.

The findings in the eighteen cases of the second or pediatric type were as follows:

The middle ear condition was the most inconspicuous part of the picture. The discharge from the ear was small in amount and as a rule thin. Signs of tension within the middle ear cavity are for the most part absent. A discoloration of the drum with a slight thickening and a sagging of the post-superior canal walls is always present. On opening the mastoid antra, which was done as soon as the diagnosis was made, granulations and pus were found filling the antra. All eighteen of these cases had involvement of both mastoids. Laboratory report was as follows: Hem. Strep. thirteen; H. Strep. and Staph. three; Staph. two. Of the eighteen, thirteen recovered and five died. Three of the five that died were four months old, one six months and one eleven months. Four of these were hemolytic Strep. infections and one staphylococcus. This type of case is a pediatric first and last. They are first seen by the pediatrician and his constant care after the focus has been removed is absolutely necessary if results are to be expected.

DISCUSSION

Dr. Thomas M. Watson, Wilmington: I should like to add a little more on the pediatric aspects of the first case. Unless a man had seen the patient it would be impossible to realize how far down the road she was. When the child came in she was moribund, cyanotic, and of that extremely gray, dusky appearance which Dr. Jeams has described. There was extreme anhydremia. According to the doctor who referred the case, she had lost two or three pounds within the last forty-eight hours. She was in a coma; we could not arouse her at all. We searched for three days for some focus elsewhere but could not find anything definite. The lungs were clear on physical examination and on X-ray. The urine showed a few pus cells. We got just enough to examine microscopically; she had had no urine for twenty-four hours when she came in. The weight was fifteen pounds. The X-ray of the chest and the examination of the urine were negative. The physical findings everywhere were negative. In the ears there was a suggestion of inflammation but no positive mastoid signs, so this case was operated on purely on the elimination of other foci. Before the operation there was extreme anhydremia; we would give fluids and in twelve hours the child would be dry as a chip again; if we picked up the skin it would stay right there. We gave fluids on the operating table, and the next morning the child was not dry; the skin was elastic; and it fitted exactly into this class where the absorption of streptococcus toxin, as described by Marriott, prevented the cells from absorbing the fluid that was given. The weight on admission was fifteen pounds; one month after discharge (forty-five days later) twenty-four pounds and eight ounces. I think it is definite that if the child had not been operated on that night she would not have lived until morning, because she could not retain fluids and was as far down hill as she could go. The operation is simple, and since it is done under local anesthesia it does not shock them much more than taking a bottle. We give morphine before operation, a pretty good knock-out, and do away with shock. Even if you do not find a positive mastoid, it

has not harmed anything to have opened the mastoid. In our series there was only one case in which there was not a positive culture.

Dr. J. P. Matheson, Charlotte: I think the nose and throat men have to give thanks to the pediatricians for calling our attention to what is known as the pediatric mastoid. The second statement I want to make is that I have been in this work for twenty years, and so far as I know not a single typical case such as Dr. Sloan has described here has come under my observation. I do not mean that there have not been any such cases, but the pediatricians in Charlotte have not found them. About three years ago, when some of the pediatricians had been out to St. Louis and came back, they wanted an ear examination for every child with diarrhea and vomiting. In some of these cases nothing could be found; the otologist could find nothing. Of course, there was a wide gulf between us and a little misunderstanding about it. So far as I know, none of these children developed mastoiditis and none died. Of course, there was a very slight suspicion, knowing that this type of case was being looked for and being expected, that we incised ear-drums when not necessary. I frankly confess that I have incised ear-drums that I thought later should not have been incised, and a few days later infection would set up. Of course, these were in very young children. In a child under ten months of age, so far as I am individually concerned, it is not always possible for me to tell when the drum should be incised and when it should not. The first point I want to make is that perhaps there has been too much enthusiasm, too many people finding these cases; the second point is, whether we can consider autopsy findings in children's ears as always positive. I happen to have an old acquaintance with Professor Fischer of Vienna, pathologist, and the best I can get from him is that in a child of this age there is only a very small amount of air space, possibly about one-sixth to one-eighth of the air cavity of the adult, and that the middle ear cavity is filled up with mesodermic tissue. That is a very fine culture medium. The eustachian tube is wide and long, and, if the child has some disease and lies sick for several days, secretions or food will get into the eustachian tube and, if the child dies, a culture made after death will show bacteria. I think in a child of almost any age that dies from a wasting disease if you will make a culture after death you will find infection. Fischer's idea was that it is a terminal infection. I do not understand why we have so many of these cases in one locality and in another locality do not see them and do not have deaths. I do not mean that in the way of criticism, because I have an open mind on the question. I have been searching diligently for cases of this kind and hoping that I should run into one, because I want to see it. I know they must occur, because these men have seen them; on the other hand, I can not understand why there are so many in one place. So far as I know, there has not been a single case of this pediatric type in Charlotte that has gone on to mastoiditis. I have seen a child acutely ill, vomiting for two days, the ear-drum violently reddened; and if you open the ear-drum the vomiting stops. That type of case I have seen, but I have not seen the type in which you have to do an antrotomy or a mastoidectomy.

Dr. J. Buren Sidbury, Wilmington: About three or four years ago I read a paper on hemorrhagic disease of the newly-born, and this same criticism was made of our community; I was asked why we have so much hemorrhagic disease of the newly-born in Wilmington and not in Charlotte. I had to answer that criticism by saying that one of the cases I reported in my paper was delivered in Charlotte and came to Wilmington for diagnosis. (Laughter.)

In regard to the report that Dr. Sloan has given, these cultures came from the mastoid cavity at operation and not from the middle ear. The mastoid cavity is more or less a closed cavity. When this infection occurs in the mesodermal tissue the mastoid cavity, becoming infected from the middle ear, becomes a closed cavity, and the child absorbs poison. I think the criticism might be justified if the cultures were made from the middle ear, but they were made from the mastoid cavity at operation. In one case the pus was caked just like cheese.

I think there is only friendly rivalry between the pediatrician and the otologist. We have had a very good time, in all good faith and good spirit, but if the otologist is going to say operate on these cases from what he finds in the middle ear he is of absolutely no good to us as a consultant. That is true, not in every case, but in the cases which disturb us most. We have a case in the James Walker Memorial Hospital now, an athreptic infant running a temperature of from 101 to 105 degrees. Every possible means of diagnosis was used in this case. The X-ray, blood examination, everything was negative. There was no sagging in his canal; nothing except discharge from the ear. As a matter of elimination we had the otologist open this child's ears. Both were filled with pus and granulation, and a culture showed streptococcus hemolyticus. That child is now going through the battle. I do not know whether he will win, but I do know that had not his ears been opened he would long since have had his funeral.

We are all working for the same end. I think in regard to the *post hoc* and *propter hoc* of this thing, if you find in any ear a hemolytic strain of the streptococcus, that is not a normal condition; it is a pathological condition. Pus is pathological, wherever you find it. If it is in the mastoid and you have eliminated everything else, I think our honest conclusion must be that it is the cause of the trouble. I asked Dr. Sloan several days ago, after reading over his paper, if the ear findings were absolutely nil and he had to depend upon something else. We have to come to the conclusion that it is the child's general condition on which we have to depend and not the otological findings.

In regard to opening the ears, we do not open ears as pediatrists because we want to take anything away from the otologist. The Lord knows we would like to throw more on them. But if we were to have an otologist open every ear that needs opening, I should have to hire Dr. Sloan to ride on the back seat of my car to open them. If they can pay Dr. Sloan or somebody else, I am delighted to turn them over to him. But we know that many people are not able to pay one doctor, and, besides, the otologist is busy in his office, and it saves time. I do feel that so far as opening the ear-drum is concerned the surgery can be done just as well by a competent pediatrician as by an otologist, and the otologists

are as busy in their offices as we are on the outside. If the parents are able to pay I am glad to turn the case over to the otologist, but it is a matter of common sense and expediency.

Dr. J. G. Murphy, Wilmington: I have been in this work for twenty years. Looking back the other day over papers I had read before different scientific meetings, I found in the titles of three of them the word "conservatism," so I think no one could ever accuse me of not being conservative. The first case of this series I operated on for Dr. Sidbury. It had every sign for a mastoid operation absent except a thin serosanguineous discharge from one ear. We did a double mastoidectomy under local anesthesia; and if any doctor may ever modestly say that he saved a life, I may say I know the mastoid operation saved the life of this little infant who was sleeping away. This was on November 1, 1924. Since then we have had the series that has been partly reported to you by Dr. Sloan, and that series has led me to know absolutely that there is something to this. I have operated on a good many of these cases in which I had to take the pediatrist's diagnosis, and I think I can modestly say again that the lives of a good many of these infants have been saved. They were leaving us and were leaving us rapidly. I am slow to go into radical things, but in the twenty years that I have been practicing a great many changes have come about. Still claiming to be conservative, I predict that in five years time the otologist and pediatrician will be together on this proposition and that there will be many, many more infants who will have had a chance and are living. I am sure of that, because the series of cases has been too convincing. I just had to believe. I have tried to put off operation in a good many of these cases and went into it reluctantly, but when an infant is slipping away, dry, almost cyanotic, and then is operated on and is seen to come back, as in this series of cases, it has convinced me. I am not a crank on the subject; I am slow to operate yet; but if you wait for the ear symptoms, if you wait for the classical symptoms of a mastoid or even one or two of them, your patients will be dead. It is done under local anesthesia, with morphine; and it is the exception to have a baby cry on the table. It does not shock them; not one of this series of cases had shock from the operation. With everything pointing in that direction, I predict that in five years' time a great many of you will see the necessity and do the operation and save the lives of these infants who are now dying.

Dr. L. W. Elias, Asheville: I have been to St. Louis and have seen Dr. Marriott's work and the enthusiasm he has. I was there last spring, when he was just back from visiting Dr. Jeams and was even more enthusiastic. In the interest of statistics I hope that we shall not lose our balance. In Asheville, when I came back, I looked for these cases and did not find them. Either they go to Dr. Sidbury before they come to me, or they do not die. I should like us to keep our balance and not rush in and do the operation when they do not need it, but I am equally anxious that it be done if it is needed. I should like to hear from Dr. Briggs and some of the other men up there as to whether they have found any of these cases.

Dr. H. H. Briggs, Asheville: I am very sorry that I did not hear the paper. I shall not presume, consequently, to discuss it but should like to say something about a few points brought out in the discussion. About twenty year ago some of the ear men in Vienna made a number of experiments on the content of the middle ear after paracentesis. Invariably they found a pure culture, not a mixed infection. The next day invariably it was a mixed infection. Whether the mixed infection gained entrance through the eustachian tube or through the incision in the drum-membrane we do not know. I mention it to show how quickly a mixed infection can get into the tympanum after a paracentesis. I believe the eustachian tube in the infant practically always contains bacteria. As Dr. Matheson stated, it is very large and short, and the regurgitation of milk and food is almost constant. Its resistance, evidently, is very great, to enable it to withstand this infection.

With reference to the question that seems to have arisen relative to the overlapping of our specialties, I have always been an advocate of the splendid pediatricians in Asheville (of whom Dr. Elias is one) knowing as much as possible about ears. I even went so far as to present him a few years ago with an apparatus which I had found in Europe and thought might be a good one for him and other pediatricians—a little instrument which he uses invariably to open the ear-drum. It consists of a little cannula about two inches long through which goes a plunger, the end of which is tapered off on three sides, the three cutting edges being about two millimeters long. It has the advantage of making not a linear incision but a star-shaped incision. Personally I have never used it, because I have been using another method for a long time; but I do believe that is a safe instrument not only in the pediatrician's hands but in the hands of the general practitioner. I did not send it to Dr. Elias because I thought he was not expert with the usual methods of paracentesis, but I do believe the pediatrician should know not only when to incise an ear-drum, but, more than that, be able to diagnose a condition in the middle ear. That is a very difficult problem, as you all know. When an infant cries, on account of the hyperemia the ear-drum bulges almost as much as it might from fluid. So it is an immense job to diagnose a condition there, and of course that should be done, as nearly as possible, before any operation.

One speaker spoke of the safety of a mastoid operation, even though in some cases normal mastoid cells were found. If I am quoting correctly I would challenge that statement. We have all probably opened normal ears, but I do not look upon the mastoid operation in infants as a safe operation, especially if the mastoid is not diseased. Most of the pathologists with whom I discussed this problem in Vienna are practically of one mind on that, agreeing that the normal mastoid when opened and curetted never gets well. Look back over your cases and see if that is not so. We find that the ears that do not do well after a mastoid operation are those that were most nearly normal. They believe that a normal mastoid, if opened, will not get well.

Dr. R. S. Beam, Lumberton: There seems to be right much difference of opinion between the pediatrician and the otolaryngologist. For this

reason I feel that I can not let pass by this opportunity of mentioning my experience in this work during the last fourteen years. During that time I have seen a good many mastoids. I did not refer to my record because I had no intention of discussing this paper, but I happened to look up the record of the mastoids done during the past year. There were fifty-three, and a number of these were in infants under ten months of age. I want to call attention to the large number of these cases with absolutely no local symptoms, cases suffering from gastro-intestinal symptoms, dried up, shriveled, anemic. Sometimes the child has been under the care of a general practitioner for possibly a month or six weeks without ever any suggestion of ear symptoms. There are some points on which I do not agree with the pediatrician, and I shall not take up those; but I am going to say that I believe I concur more with the pediatrician on this subject than the average otolaryngologist. I have a case that I operated on about a month ago, a baby about six months of age referred to me from South Carolina. It was absolutely blue and little more than skin and bones and was admitted to the hospital with a temperature of 105 degrees and the history that it had had pneumonia, gastro-enteritis, and everything else that could be thought of. The doctor had decided that probably there was something wrong with the ears. I looked over the child but found only a little redness and slight drooping of the posterior superior canal wall—and I believe you will find that in practically every case with infection of the mastoid antrum. Without those signs I have to rule out everything else. I kept this child in the hospital for five days before I operated for mastoid. It was examined from head to foot, and we could find nothing else. Then I did a mastoidectomy, and the child came out like a rose blooming in the morning. It has gained some five or six pounds in the ten days since the operation.

Dr. Sloan, closing the discussion: We are not advocating antrotomy or mastoidectomy on every child that has gastro-intestinal symptoms. There are numerous cases that have these symptoms, but we are not speaking of them at all; we are referring to those in whom everything else has been eliminated. If you wait for mastoid signs you will have a dead baby before you operate. There are, as a rule, slight ear signs, and these are a conventional part of the picture. There are changes enough to warrant going into that mastoid cavity, and if gone into I believe you will find enough pathology there to warrant having gone into it.

As to localities, these cases have not been confined to Eastern Carolina at all. One case I reported came from Rockingham. The majority are not from Wilmington at all; they come from South Carolina and central Carolina. I do believe that if you operate, even in the absence of the indicative signs that you get in older children and in adults, you will find pus in the mastoid and will prevent many of the deaths in children for whom you sign a death certificate for diarrhea.

ETIOLOGY AND TREATMENT OF ACUTE OTITIS MEDIA

By Hugh C. Wolfe, M.D., Greensboro, N. C.

My object in presenting this paper is three fold: First, to give my personal views and methods of treating this disease. Second, to elicit a friendly discussion and constructive criticism by the profession in order to learn your methods of dealing with the acute ear problem. Third, to aid if possible, the prevention of chronic otitis. It has been said that the chronic conditions is the field of the specialist. That is true in part, but I think that if the specialist were to see the acute conditions there would be a lessening of the number of chronic cases. It requires as much patience and skill in dealing with acute conditions as it does the chronic, and I dare say that if the acute conditions of the ear received the proper attention in the beginning, we would not have so many chronic conditions develop.

ETIOLOGY

The immediate cause of acute otitis in the majority of instances is a direct infection of the tympanum from the nasopharnyx. In about ninety per cent of the adult cases, we can get a history of the ear stopping up while the patient was blowing the nose. In children there is usually a history of vomiting, coughing, sneezing, or blowing the nose preceding the onset of earache. The predisposing causes are: the acute exanthematous fevers, as scarlet fever, measles, German measles, diphtheria, pertussis, influenza, acute and chronic sinusitis, rhinitis, acute and chronic tonsilitis, hay fever, pneumonia, bronchitis and post nasal obstructions such as, adenoids and nasal polypi. Snuffing fluids up the nose or forcing water into the eustachian tubes while diving are also causes of the disease.

The exciting organisms are usually streptococcus hemolyticus, staphylococcus, albus and aureus, pneumococcus, diphtheria and occasionally pyocyaneus.

SYMPTOMS

In young children suffering from any of the various causes I have named or regardless of the cause of illness who become restless, peevish, twisting the head from side to side, crying without apparent cause, putting the hand to the ear, refusing the breast except while the affected ear is against the bosom, point to acute inflammation of the ear. The attending physician, pediatrician, or otologist must be on the lookout for these symptoms. We must remember the very small child can't tell us his ear hurts. In all the acute fevers the ears should be routinely examined and closely watched. Of course, in the case of an older child or adult they can tell us they have pain, but in case of the baby, one must find out by observation and inspection. Then we will not be embarrassed by calling by some day, and have the mother show us the pillow case covered with pus, and tell us the child is much better and that it only had a rising in the ear anyway. The symptoms are more pronounced in older children. The temperature may range from 99 to 104. Prior to incision of the drum or perforation the pain may be excruciating. There may be nausea and vomiting, and even convulsions. Sleep is usually out of the question, headache is usually present.

OBJECTIVE SYMPTOMS

The positive diagnosis can usually be made by an intelligent examination of the ears with an ear speculum and reflected light. The drum head usually tells the story. In the beginning there may be only a slight pinkish or red color. As the disease progresses, the drum becomes scarlet red, and thickened, at this time there may or may not be bulging. If bulging is present, the landmarks may be obliterated. In some cases where a previous attack occurred the drum may be thickened and red and the middle ear filled with pus and no bulging due to adhesions. There may be slight tenderness over the mastoid. Tenderness is usually present on pressure below the ear due to eustachian congestion or blockage. In some cases the drum will be red and boggy, and very little pain present, the patient complaining of deafness and a feeling that the ear is stopped up. Upon incision, pus will be found.

TREATMENT

The primary reason the patient calls for assistance is to get relief from pain, or to recover his hearing if no pain has developed, but the pain is his chief trouble as a rule, as far as he is concerned. Before attempting to treat an ear, we should know something about the condition of the nose, nasopharnyx and throat. We should also remember the functions of the eustachian tubes, viz: first, that of ventilation and condensation of atmospheric pressure. Second, drainage of the middle ear cavities. It is also well to remember the sequellae of an acute otitis, which may result in chronic otitis, deafness, mastoiditis, lateral thrombosis, brain abscess, meningitis, and death, and we should treat this disease with the respect it deserves. In treating an acute ear, there should be cooperation, not antagonism, between the otologist and the attending physicians or pediatrician. I think a child or adult having this disease as a result of some other acute infection should receive the attention of both physicians in their respective fields. I know it is a problem to decide where the field of one specialist begins and ends, but I do think that the field of the otologist is clearly defined. I see no more reason for the pediatrician attempting to treat an acute ear resulting from measles than I do the otologist treating measles, because it is a cause of acute otitis. I do think that each could be friendly and cooperative and get just as much out of it, and I'm sure the patient would be better off, both from a physical and financial standpoint in the long run.

IMMEDIATE TREATMENT

In a case where there is a reddened drum, with no bulging, but pain, and temperature present, I put the patient at rest and eliminate the intestinal tract. After shrinking the turbinate with adrenalin, I use negative pressure first, followed with positive pressure to inflate the tubes. I prescribe a nasal spray consisting of menthol, camphor, and chloretone inhalant to be used, t. i. d. For the pain I prescribe a mixture of menthol, chloral hydrate, phenol and glycerine to be warmed and the ear filled and plugged with cotton every three or four hours.

Acetidine or any other favorite analgesic will usually aid in controlling the pain. By this method of treatment you reestablish the function of the eustachian tubes by attention to the nose and nasopharynx. The ear drops promote the reaction of inflammation, increasing nutrition and phagocytosis, at the same time relieving the pain, and edema. It also gives a sterile field in case the drum is incised which is always done in twenty-four hours if pain persists. Of course, a case in which the drum is bulging, the slightest amount, I incise at once. Often cases of acute catarrhal otitis do not go to suppuration and will clear up under this treatment. Except in cases of very small children, I prefer to incise the drum under local anesthetic, triple anesthetic being used. Chloroform is used when necessary to use a general anesthetic. The triple anesthetic serves a dual role. It sterilizes as it anesthetizes.

It requires about twenty minutes to get complete anesthesia. The drum is incised between the malleus and posterior border throughout its width. This gives ample drainage and repairs much sooner than a small puncture which will plug up with thick pus and prevent the proper drainage. A small gauze wick is inserted into the meatus up to the drum, the ear filled with ninety-five per cent ethyl alcohol and a small pledget of cotton placed in the meatus. The alcohol helps sterilize the canal in the chloroform patient, while it has the same action in the locals and also neutralizes the carbolic acid used in the triple anesthetic. The patient is instructed to lie on the operated side and to change the cotton as often as necessary but not to disturb the drain. The drain remains in the ear twenty-four hours when it is removed and the canal dried. Under no circumstances do I allow an acute ear to be irrigated, I can't condemn the syringe too strongly, you are inviting a chronic otitis when you use it. I have not irrigated an acute ear in three years. In that time I do not remember having an ear to become chronic if I was fortunate enough to treat it from the beginning. The nurse or attendant is instructed how to clean the ear with a cotton swab, as well as they can. Essence of caroid is prescribed, the ear to be filled after the canal has been mopped, the tip of the dropper remaining in the fluid while the bulb is compressed and relaxed several times in order to suck the pus out. This is repeated until no pus can be sucked into the dropper. The ear is then filled again for five minutes, the patient lying on the sound ear. This dissolves and thins the pus and also is mildly antiseptic due to the alcoholic content. The patient is then allowed to turn over and drain the ear. This is followed with 1-500 solution neutral acriflavine and the bulb is again compressed several times. If pus is drawn into the dropper it is emptied and the ear filled again and plugged with cotton. The patient or attendant is instructed to change the cotton as often as necessary. The above procedure is carried out every three hours. Once daily two per cent solution acetic acid is substituted for the acriflavine. The nose gets daily care and light inflations of the tubes after the negative pressure is applied, frees the eustachian tubes and middle ear of pus accumulation. This also prevents adhesions of the drum and ossicles and tends to restore the ear to normal function. Usually the ear is well in from one to three weeks depending upon the condition of the ear when treatment is begun. In case the discharge becomes profuse and pain persists after

four days of treatment you may be assured that the mastoid is involved. Even then the ear will clear in most instances without operative interference, but common sense and good judgment must be exercised in each case, as each individual is a separate problem and must be treated as such. In the past three years I have had only one patient to develop an operative case of mastoiditis where the patient was seen at the beginning and this was due to the lack of cooperation on the part of the patient who seemed to know more about her condition and the treatment she needed than I did. The cases that develop an operative mastoiditis are usually those who have ruptured drums or are about to rupture when first seen. These patients have usually run the gauntlet of all the known household remedies and seek advice from the physician as a last resort after suffering for three or four days—sometimes longer.

After the drum has healed and in some cases before, we should direct our attention to clearing up the obstructions in the nose and throat, removing the tonsils and adenoids and polypi if present. The electric ear vibrator is used to advantage after the drum membrane has healed. This aids by increasing the blood supply and the vibrations prevent the formation of adhesions and ankylosis of the ossicles.

CONCLUSIONS

The drugs employed and method of procedure are recommended for the following reasons:

1. The patient is relieved with the minimum amount of suffering.
2. Irrigations are eliminated, and at the same time chronic otitis practically prevented.
3. Course of the disease materially shortened.
4. Complications less frequent.
5. The rapid return of the ear to normal function.

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DISCUSSION

Dr. J. G. Murphy, Wilmington: I do not irrigate the ear, either, because it does not do a darned bit of good. It does more harm than it does good. I want to emphasize that point. When Matheson and I took up this specialty twenty years ago the leading man in this country took up a syringe and irrigated a mastoid wound, and wouldn't he be counted an excellent surgeon today if he irrigated a wound like that? What is the difference in an ear? I do irrigate an ear that has a thick, caseous discharge that would block the middle ear canal; they need irrigation, but not the classical irrigation every three hours. It is a surgical case, and the surgeons would smile at us. I see Dr. Green over here, and I know he would not irrigate his wounds in doing general surgery. This is simply

general surgery applied to the ear. Irrigation does no good at all. That is not original with me; it was taught me by the man in New York who taught me most about the ear. I went up there and went over the whole thing again. He said to me some twelve years ago that irrigating the ear did not do any good and said it a little more emphatically than I did a minute ago. I have followed his practice and have no reason to apologize for it, for I have seen the harm done by irrigation. Irrigating does not do a bit of good except in the cases where the secretions would block the external canal.

Dr. Wolfe, closing the discussion: My idea in bringing up this subject was to stop the irrigation of these ears. There is a drug that I have been using, essence of caroid, that helps to eliminate the irrigation when you have that thick secretion. I should think the pediatrician would naturally see as many ears as or more than the otologist, but I doubt very seriously that they could not find otologists to see these ears. Anyway, any man who does not have time to give an acute ear the proper attention should not attempt to treat it at all. My idea is to prevent the chronic running ear, and I believe with this treatment (which I have been carrying out for the past three years) it could be done. Understand that I used to irrigate them, I used to shoot it in; but I admit I was doing the wrong thing.

I should like to report a few cases now.

Case 1: Mrs. I. M. R., age 55. Widow, white. N. Y. Diagnosis O. M. P. A. *Chief Complaint:* Earache following acute cold in head (flu). Left ear stopped up while blowing nose. Pain both ears. Consulted February 5, 1927. Incised left drum February 7. No irrigations. Treated patient twelve times. Patient well, hearing normally March 2. Duration twenty-five days.

Case 2: Mr. J. L. R., age 53. Married, white. Greensboro diagnosis O. M. P. A. *Chief Complaint:* Headache and earache. Left ear stopped up while blowing nose. Had purulent nasal discharge, influenza causing this. Incised left drum March 9, 1927. Treated nose and ears eighteen times. April 16, well. Hearing normal. Duration thirty-eight days. Sick ten days before I saw him.

Case 3: P. S., age 2 1/2. Female, white. Greensboro diagnosis O. M. P. A. Double. *Chief Complaint:* Influenza, nasal discharge, earache. Both drums incised February 18, 1927. Treated nine times. March 15, well.

Case 4: Mr. C. W. S., age 34. Married, white. Greensboro diagnosis. Acute catarrhal otitis. *Chief complaint:* Right ear stopped up while blowing nose. Some pain, both ears. Did not incise drums. Treated eleven times. Suction, inflation, electric massage. Pain controlled with drops referred to in paper. Well March 31, 1927. Duration seventeen days.

THE RELATIONSHIP OF CERTAIN FOCAL INFECTION TO GENERAL DISEASES OF INFANTS AND CHILDREN

By Dr. Marion Y. Keith, Greensboro, N. C.

During the past few years much has been written concerning focal infection in relation to the production of certain diseases of infancy and childhood. We now realize that there are many conditions formerly

regarded as nutritional and metabolic diseases which are in reality the results of hidden infection. It is the purpose of this paper to call your attention to some of these conditions which are yet quite common, but are being overlooked. There are many conditions that have been attributed to infection of the tonsils, adenoids, and middle ear, such as chest lesions, genito-urinary diseases, joint complications, and skin eruptions. These foci have been readily recognized without difficulty and radically removed. The results, however, in many instances, have been disappointing, because there are other areas less obvious than those mentioned, in which infection occurs, such as mastoid antra of the infant and nasal accessory sinuses of infants and children. These have been often overlooked because of the difficulty of examination and the belief that the sinus and mastoid cells are not developed sufficiently to be the seat of infection, and, therefore, amenable to treatment.

The mode of distribution of infection from the primary seat to nearby and remote parts of the body may be either by the way of the lymph channels or the blood stream. Extension to nearby areas is commonly through the lymphatic system, whereas the infection is carried to the more distant or remote areas by way of the blood stream from the primary focus. Whether or not a secondary infection occurs after the organisms enter the blood stream from the primary focus depends upon the following factors:

1. The bactericidal or antitoxic power of the blood.
2. The specificity of the organisms for certain tissue.
3. The physiological or structural changes of the circulation.
4. The virulency of the organism.
5. The lowered resistance of the tissue.

The chief problem of the pediatrician during infancy is that concerning nutrition. We have learned that there are certain food requirements of the infant, and are able to judge their digestive capacity, and we now know that such require simple food formula. If an infant who has taken the proper food in adequate amounts, fails to gain or develops vomiting, diarrhea, and prostration, the food is not at fault. Change in the formula need not be made, but the source of infection must be sought and eliminated. The infection may be either within the gastro-intestinal tract or far remote, often misleading by symptoms displayed. Infection occurring within the gastro-intestinal tract itself may be the cause of the difficulty, as in the case of bacillary dysentery. Such must be discovered and properly treated. Yet the purpose of this paper is to call your attention to conditions that are the result of infection of distant areas which display symptoms not relating to the point of infection.

Middle ear infections are common in early infancy. Otitis media in most instances is recognized if a careful examination of the tympanic membrane is made. Yet there are cases in which such conditions are not so easily recognized. Especially is this true in the case of malnourished infants who fail to gain on the proper food and care. In this case the drum membrane may be neither red nor bulging. Careful examination with the aid of the electric otoscope reveals a dull gray color and absence of lustre and transparency. Paracentesis is often followed by a creamy pus or a small amount of serum. The staphylococcus is often the infect-

ing organism, and in most instances improvement in the infant's general condition is noted at once, regardless of the change in the diet. Yet there are cases in which improvement is not so rapid and results are not so great. In such patients the diarrhea persists, weight loss continues, prostration becomes marked, and the condition soon becomes alarming. Under such conditions other sources of infection must be sought and removed. The mastoid antrum oftentimes is involved in this type of case because of its anatomical relation to the middle ear and the stage of its development at this age.

In early infancy the antrum and middle ear form essentially one cavity communicating through the small aditus ad antrum. The antrum composes the only mastoid cell developed at this early age, and is only a small cavity about the size of a pea. For this reason in most middle ear infections the antrum is also involved. Therefore, when the middle ear is drained, the antrum also drains, unless obstruction arises, which is not at all uncommon, because the opening or aditus is narrow, and the mucosa swells readily, so as to completely shut off the two cavities. It is in such conditions as this that the infection remains in the antrum and soon gives rise to grave constitutional symptoms. The classical signs of redness, swelling, tenderness over the mastoid region, are often absent in this type of case. The only local sign present may be a sagging of the posterior superior canal wall, just external to the tympanic membrane. The sag is due to the fact that the bony annulus is not complete, so that pressure within the antrum causes a protrusion of the canal wall. The decision to drain the antrum rests with the pediatrician as well as the otologists. The general symptoms will depend upon the nature of the infecting organism. Streptococcal infections are characterized by a rapid change in course, profuse diarrhea of the cholera infantum type, rapid loss of weight with marked dehydration and hydrolability. Yet in other types of infection the course is less rapid. There may be an absence of fever, a failure to gain in weight, persistent vomiting, simulating pyloric stenosis with alkalosis, and the ultimate condition of marasmus and athrepsia. In such cases with a history of repeated ear infection and puncture, with the above symptoms persisting after other sources of infection have been ruled out, drainage of the antrum is indicated as drainage through the drum is insufficient.

Local anesthesia is used: a small piece of bone over the antrum is removed, and a gauze drain inserted. There is no appreciable shock, and no mortality due to the operation. This procedure is referred to as a post auricular drainage rather than a mastoidectomy. In such instances it is advisable to do a post auricular drainage on both sides as these infections are commonly bilateral. With this procedure, there should be no fear in subjecting a patient to an operation of this nature and no longer should the otologist hesitate with the above condition present. Many of the severe cases of diarrhea, vomiting, and nutritional disturbances have responded promptly with marked improvement, and ultimate recovery, without alteration in the feeding, after such infections have been removed.

Before discussing infections of the nasal accessory sinuses there are a few points to be considered concerning the development of these cavities. It is now definitely proven that certain nasal accessory sinuses are

present at birth, although small. The maxillary antra, the membranous sphenoids, and some of the ethmoids are present. As age advances, the cavities enlarge, and the sinuses ultimately develop. Sinus infection can occur at any age, and give rise to general symptoms. Diagnosis is difficult and misleading because of the absence of local manifestations.

In older children too much attention cannot be laid upon the necessity of properly directed care and treatment of sinus infection. One of the frequent manifestations of chronic sinusitis is the picture simulating that of tuberculosis and a mistaken diagnosis of the same is made. The child is pale, languid, and there is a slight elevation of evening temperature, a loss of appetite, and often a chronic cough. The posterior cervical glands are enlarged. However, the Pirquet and tuberculin tests are negative. X-ray shows an enlarged hylus shadow, the peribronchial thickening often extending out into the parenchyma of the lung. Small dense areas such as these are usually interpreted as shadows of calcified glands.

Again, we are sometimes confronted with certain symptoms giving rise to abdominal pain and accompanied by much vomiting, which are associated with chronic sinus infection. In some of these patients the symptoms have been so suggestive of appendicitis that the abdomen has been opened, but no pathological conditions were found except in some instances enlarged abdominal glands. The condition is often diagnosed as cyclic vomiting and is not uncommonly due to a sinus infection. (Brenaman has called our attention to abdominal symptoms due to respiratory infections.)

Asthmatic symptoms are observed in children suffering from chronic sinus infection when the asthma is due to a definite sensitization. There occurs a hypertrophic condition of the nasal mucosa which is said to be predisposed to asthma. However, in other instances, sinus infection is apparently an original cause.

Chronic sinus infection in children, especially in the malnourished, often leads to certain cardiac conditions such as the appearance of murmurs and dilatation. Often the erroneous diagnosis of organic heart disease is made, but the condition improves with the removal of the infection. It is quite true, however, that sinus infection is usually observed in patients having true rheumatic-endocarditis, rheumatic manifestations of chorea and articular rheumatism. Therefore, it is just as important to clear the sinus infection in preventing chorea, endocarditis and rheumatism, as it is to remove the tonsils and adenoids in the treatment of such conditions.

One of the most important and clear-cut manifestations of infection in the nose and throat is nephritis. There are two common forms of nephritis which occur in children: tubular nephritis, or nephrosis, and acute hemorrhage or glomerular nephritis. These have been invariably associated with infection. The infection has been found more frequently in the nose and throat than elsewhere in the body. The characteristics of tubular nephritis are: decreased amount of urine, much albumin, numerous casts, absence of blood, normal phenolsuphonphthalein output, normal N. P. N. of the blood, normal blood pressure, anemia, generalized edema and ascites. The works of Clausen on this subject points out the fact that this condition is not uncommonly associated with infection of the para-

nasal sinuses. The infecting organism has often been the hemolytic staphylococcus. He has demonstrated in the blood the presence of a substance which has a marked physio-chemical effect and is capable of altering the permeability of membranes. This substance disappears from the blood and urine coincident with the clearing up of the sinus infection and the disappearance of the edema. Good results can commonly be obtained which is marked by rapid loss of fluid and weight, disappearance of the albumin in the urine, if the source of the infection has been removed and the diagnosis is made early. Reinfection of the sinus may take place, however, and cause a return of all symptoms. Infection which has persisted for a long period will often lead to permanent change in the kidney and the results are disappointing and without improvement. This is a hopeless feature of the treatment in this type of case. Unfortunately, it is not always possible to completely eradicate the infection, but this is the only method of treatment which is calculated to bring about more than a temporary or symptomatic improvement. Dietary regulation, restriction of fluid, sweating, purging, and the use of diuretics are methods of treatment incapable of producing a permanent improvement. Recovery following the use of such method is to be contributed to spontaneous clearing up of the infection in the sinuses elsewhere.

Hemorrhagic or glomerular nephritis is usually the result of a streptococcic infection. The most common areas of infection are the tonsils, adenoids, middle ear, and mastoid, rather than the nasal accessory sinuses. In this type of nephritis, in contra-distinction to nephrosis, there is blood in the urine in some stages of the disease which is quite marked at times. The urine is not scanty in amount. There is an elevation or retention of N. P. N. The blood pressure is elevated if the disease is of long standing; capillary changes throughout the body may be noted. In the majority of cases hemorrhagic nephritis is of short duration and clears up spontaneously. However, if the infection is permitted to remain for a considerable length of time, permanent changes to the capillaries of the renal glomeruli occur and complete recovery is not possible even though the source of infection be removed.

We have discussed in this paper some of the conditions that frequently occur as complications of sinus infection. Yet we have not mentioned some of the most common, such as pyelitis, which is often attributed to such infections, and relief has been obtained by removal of the infection. I wish now to mention a few conditions which have occurred, and have been associated with sinus infection. We see patients at times with symptoms simulating epidemic encephalitis. We have also seen patients with hemoplegia and paraplegia, in which the association with sinus infection has been definitely established. We have observed children whose symptoms were indistinguishable from idiopathic epilepsy, and such manifestations have ceased following successful removal of sinus infection.

It must not be assumed from what has been said that every infant or child with vomiting and diarrhea or suffering from any of these manifestations mentioned should immediately be subjected to operation or treatment of the mastoid or nasal accessory sinus. It is not my object in this paper to over-emphasize sinus infection, but merely to draw your atten-

tion to the fact that such infections are too often overlooked as possible etiological factors in the causation of general symptoms.

DISCUSSION

Dr. M. E. Bizzell, Goldsboro: I want to ask a question about opening the maxillary sinuses in children in cases in which you find a chronic hyperplastic maxillary sinusitis. In these cases have you ever resorted to a radical operation?

Again, in making a nasal antrum opening, do you make it far back to prevent any effect on the dentition of the teeth that may come from making it too far forward?

I should also be glad to hear if anyone knows of any satisfactory way of handling ethmoiditis in the young, preventing its becoming chronic and giving trouble in later years.

Dr. Sidbury: I think you will remember the case of Tom Reece, a child five years of age. He had a typical nephrosis, was swollen up all over, and showed albumin. He had carbuncles. We operated on all his sinuses and had to drain them very freely to keep his edema down. Other than that I cannot say.

Dr. Keith, closing the discussion: I should like to say something about the necessity of making an early diagnosis in these conditions. It is almost useless to expect any result when the infection has entered the blood stream, that is, when a septicemia or an endocarditis has resulted. Results from the removal of adenoids have been very disappointing, and more attention should be paid to the accessory sinuses.

CASE REPORTS

By B. U. Brooks, M.D., Durham.

One case came in with dehydration and loss of weight and was very toxic. It showed very little trouble in the eardrum but some sagging of the canal. The X-ray was positive. The child was operated on, the temperature came down gradually, and the child recovered. Of the three cases I am showing, one has had a mastoid and was operated on and recovered; one had a mastoid, was not operated on, and died; one had a mastoid, was not operated on and recovered. This is the patient that had the mastoid and was operated on and recovered.

This patient is a child three and a half years old. It came to the hospital from a nearby town, as sick as any patient I have seen in a long time and vomiting almost continuously. There was only slight elevation of temperature, but it was markedly dehydrated and markedly acidotic. We gave him glucose and saline, and the temperature after three days came down to normal. There is a type of middle ear disease (this I think we all realize is true) which drains through the eustachian tube. Those patients present all the symptoms of a mastoid, yet they drain out through the large, short eustachian tube. I think this patient is of that type. I was not able to demonstrate pus in front of the mastoid, but the child showed positive middle ear findings. It was one of the sickest I have seen to recover. It came in with a temperature of 101

and was given glucose and saline intravenously; the temperature gradually came down, and then the other symptoms cleared up. About the fifth or sixth day he stopped vomiting and from that time got on all right.

The next case I want to show is a child twenty months of age. This baby came into the hospital very sick, with a temperature of 105. Somehow or other we must have been lying down on the job at that time, because we did not discover that he had a mastoid until he was practically dead. We had an X-ray in the afternoon, and the mastoid findings were positive. We made preparations to operate, but just before we got ready to operate he died. We did a post mortem, and it showed a tremendous amount of pus in the mastoid antrum. He also had acute hemorrhagic nephritis. This baby had only 7,000 leucocytes. The other one we showed there had 11,000.

DISCUSSION

Dr. John C. Tayloe, Washington: Realizing that it is rather difficult to hold a child still in taking an X-ray picture, I should like to know the other points of diagnosis.

Dr. J. Buren Sidbury, Wilmington: I think it is the consensus of opinion that X-ray in these cases is of absolutely no value, though the pus may be there—not a great deal in quantity at the beginning. That question was asked in Atlanta and answered in that way, that X-ray is of no value in these atypical mastoid cases.

Dr. Brooks, closing the discussion: In the cases we have found positive X-rays in about one hundred per cent.

The Association of County Medical Society Presidents of North Carolina

Wednesday, April 20, 2:00 P.M.

ROOM B, WASHINGTON DUKE HOTEL

The Association of County Medical Society Presidents met in the Washington Duke Hotel in Durham, Wednesday, April 20, in connection with the State Medical Society of North Carolina.

The President of the Association, Dr. R. F. Leinbach, was unable to be present and Dr. J. R. Hester presided.

The principal address before the association was by the President of the State Society, Dr. John Q. Myers, as follows:

"Mr. President: This is the baby organization of the North Carolina Medical Society. It is in my opinion the outburst of the need in our great organization to study, formulate and if need be, dictate and direct the affairs of this, The State Medical Society of North Carolina.

"Your organization is composed of the Presidents of the various county societies of the State, recognizing that a President or a former President of a County Society is a leader of medical thought and medical activities in his county, and is thereby in a better position to offer suggestions for the activities of the State Medical Society than any physician who does not enter into the activities and thoughts of the doctors, as a whole.

"These representative men, as presidents of local county medical societies and the past president of the medical societies know better the needs and wishes of the Medical Society of the State of North Carolina.

"I believe, you gentlemen, whose organization is the baby of the North Carolina Medical Society, have assumed a great responsibility by organizing the Association of County Medical Society Presidents of North Carolina.

"The activities of this Society are in your hands. Think well, act well, study our needs, recommend to your 'daddy' what course is better for him to pursue.

"I recommended in my presidential address yesterday that a cabinet be formed either by appointment, designation or election for the future Presidents of the Society of North Carolina, to be composed of you gentlemen, and that your duties to the future presidents will be to go into council with him, to advise with him in all the undertakings for the betterment of the North Carolina Medical Society, to respond to all calls sent out by him for your assistance, in directing and advising the medical men of the State the needs and best activities to stimulate interest in the education of the people as a whole to the needs and future legislation in regard to public health laws, or to oppose legislation which might interfere with the progress of the best undertakings and based upon the best medical thought and suggestion by the Medical Society of North Carolina.

"I thank you, gentlemen, for this opportunity of expressing to you in your organization the ideals which I have been looking for for the

past several years, during my activities as an active member of the Medical Society of North Carolina."

Dr. E. T. Dickinson followed Dr. Myers with some very interesting remarks. After these addresses, the Association went into a business session and the following officers for the ensuing year were elected:

Dr. J. R. Hester, Knightdale, who was the first president of this Association when it was formed at Pinehurst in 1925, was elected President.

Dr. C. W. McPherson, of Burlington, was elected First Vice President.

Dr. E. T. Dickinson, President of the Pitt County Medical Society, was elected Second Vice President.

Dr. W. J. B. Orr of Smithfield was elected Third Vice President.

Dr. H. L. Brockman, of High Point, was elected Secretary-Treasurer.

It was decided that the officers of this Association composing an executive committee shall meet at a date prior to the next State Society meeting to arrange for matters to be taken up at the next meeting.

WOMAN'S AUXILIARY

TO THE

Medical Society of the State of North Carolina

OFFICERS FOR 1928

President—Mrs. B. J. Lawrence.....Raleigh
President-Elect—Mrs. Guy Dixon.....Hendersonville
First Vice-President—Mrs. John Q. Myers.....Charlotte
Second Vice-President—Mrs. J. W. Dickie.....Southern Pines
Third Vice-President—Mrs. Foy Roberson.....Durham
Treasurer—Mrs. W. P. Knight.....Greensboro
Recording Secretary—Mrs. P. P. McCain.....Sanatorium
Corresponding Secretary—Mrs. V. M. Hicks.....Raleigh

COUNCILLORS

First District—To be supplied
Second District—Mrs. H. W. Carter.....Washington
Third District—Mrs. Thomas M. Watson.....Wilmington
Fourth District—To be supplied
Fifth District—Mrs. A. B. Holmes.....Fairmont
Sixth District—Mrs. J. R. Hester.....Knightdale
Seventh District—Mrs. W. M. Scruggs.....Charlotte
Eighth District—Mrs. J. L. Spruill.....Jamestown
Ninth District—Mrs. C. R. Sharpe.....Lexington
Tenth District—Mrs. Guy Dixon.....Hendersonville

NOMINATING COMMITTEE

Mrs. A. B. Holmes, Chairman, Fairmont, N. C.; Mrs. John Q. Myers, Charlotte, N. C.; Mrs. J. S. Milliken, Southern Pines, N. C.

MINUTES OF THE FIFTH ANNUAL MEETING

The Fifth Annual Meeting of the Auxiliary to the Medical Society of the State of North Carolina was held in the Municipal building, Durham, N. C., Wednesday morning, April 20, 1927, with Mrs. R. S. McGeachy, president, presiding. The meeting was called to order by the president, after which Rev. C. C. Coleman of the First Baptist Church of Durham delivered the invocation. This was followed by an address of welcome by Mrs. N. D. Bitting of Durham, and Mrs. Dickeson responded in a delightful and entertaining manner for the visitors.

The Auxiliary was then favored with an instructive talk by Dr. L. B. McBrayer, who spoke of the value of the Auxiliary and what it should mean to the doctors of the State. He suggested that a committee be appointed to study and make suggestions for the betterment of the Auxiliary.

We next had the roll call. The minutes of the last meeting were omitted, owing to the lack of time.

The Treasurer's report showed the Auxiliary in good financial condition.

The retiring President, Mrs. R. S. McGeachy, gave a short talk in which she tried to inculcate into the members present her earnest enthusiasm and desire for better and stronger organization.

A number of Councilors from different districts gave good reports of their activities of the past year; ten or twelve county auxiliaries were organized and a great increase of membership was reported.

The following delegates to the A. M. A. were appointed: Mrs. B. L. Ashworth, Marion, N. C.; Mrs. J. W. Dickie, Southern Pines; Mrs. R. S. McGeachy, Kinston, N. C.

Under the head of new business our president asked a number of the ladies present to assume the responsibility of organizing the counties not in the Auxiliary.

A telegram was read from Mrs. A. H. Bunce of Atlanta, Secretary-Treasurer of the Auxiliary to the A. M. A. in which she extended her good wishes and deep interest in our organization.

Mrs. B. J. Lawrence, the incoming president, in a very gracious manner, thanked the Durham ladies for the kindnesses shown the visiting ladies during their stay in Durham.

No further business, the meeting was adjourned.

(Signed)

Mrs. R. S. McGeachy, *President,*
Mrs. T. C. Kerns, *Acting Secretary.*

PAST PRESIDENTS

1923—Mrs. P. P. McCain (organizing chairman) ..... Sanatorium
1924—Mrs. P. P. McCain ..... Sanatorium
1925—Mrs. I. W. Faison ..... Charlotte
1926—Mrs. J. Howell Way ..... Waynesville
1927—Mrs. R. S. McGeachy ..... Kinston

ROSTER OF MEMBERS

Abernethy, Mrs. E. A. ..... Chapel Hill
Adams, Mrs. C. A. ..... Durham
Adams, Mrs. E. K. ..... Raleigh
Adams, Mrs. M. R. ..... Statesville
Adkins, Mrs. M. T. ..... Durham
*Ashby, Mrs. E. C. ..... Mount Airy
*Ashworth, Mrs. B. L. ..... Marion
Ashworth, Mrs. W. C. ..... Greensboro
Ball, Mrs. M. W. ..... Newport
Bass, Mrs. H. H. ..... Henderson
Baynes, Mrs. R. H. ..... Durham
Beam, Mrs. R. S. ..... Lumberton
Bitting, Mrs. N. D. ..... Durham
Bittinger, Mrs. S. M. ..... Sanatorium
*Blair, Mrs. A. McNeil Southern Pines
Bonner, Mrs. K. P. B. Morehead City
Bonner, Mrs. O. B. ..... High Point
Booker, Mrs. L. S. ..... Durham
Boone, Mrs. Waldo ..... Durham
Boone, Mrs. W. H. ..... Durham
Bowling, Mrs. E. H. ..... Durham
Bowman, Mrs. E. L. ..... McDonald
Bowman, Mrs. H. E. ..... Aberdeen
Brinkley, Mrs. H. M. ..... Durham
Brockmann, Mrs. H. L. ..... High Point
Brooks, Mrs. R. E. ..... Burlington
Broughton, Mrs. N. B., Jr. ..... Raleigh
Brown, Mrs. J. P. ..... Fairmont

Bugg, Mrs. Charles R. ..... Raleigh
*Bulla, Mrs. A. C. ..... Raleigh
Bullitt, Mrs. J. B. ..... Chapel Hill
*Bullock, Mrs. Jack H. ..... Oxford
Byerly, Mrs. G. W. ..... Sanatorium
Campbell, Mrs. A. C. ..... Raleigh
*Carter, Mrs. Paul C. ..... Weldon
Caviness, Mrs. Z. M. ..... Raleigh
Cheek, Mrs. C. E. ..... Fuquay Springs
*Choate, Mrs. B. O. ..... Sparta
*Choate, Mrs. G. W. ..... Salisbury
*Compton, Mrs. B. S. ..... Oteen
Cook, Mrs. H. L. ..... Fayetteville
Coppridge, Mrs. W. M. ..... Durham
Cozart, Mrs. W. S. ..... Fuquay Springs
*Craven, Mrs. T. C. ..... Ramseur
Dewar, Mrs. W. B. ..... Raleigh
Dickie, Mrs. J. W. ..... Southern Pines
Dixon, Mrs. Guy E. ..... Hendersonville
*Dixon, Mrs. H. Carlyle ..... Madison
Ellington, Mrs. A. J. ..... Burlington
*Faison, Mrs. I. W. ..... Charlotte
Fearing, Mrs. Isaiah ..... Elizabeth City
Flowers, Mrs. Chas. E. ..... Zebulon
Gainey, Mrs. J. W. ..... Fayetteville
Galloway, Mrs. W. C. ..... Wilmington
Gibson, Mrs. Milton R. ..... Raleigh
*Gold, Mrs. Charles F. ..... Ellenboro
*Harden, Mrs. Graham ..... Burlington
Hege, Mrs. J. Roy ..... Winston-Salem
Hemphill, Mrs. C. H. ..... Chapel Hill
Hester, Mrs. J. R. ..... Knightdale
Hicks, Mrs. V. M. ..... Raleigh
*Hocutt, Mrs. Battle A. ..... Clayton
Holloway, Mrs. O. W. ..... Durham
Holmes, Mrs. A. B. ..... Fairmont
*Holt, Mrs. W. P. ..... Duke
Hunnicutt, Mrs. W. J. ..... Asheville
Hurdle, Mrs. S. W. ..... Winston-Salem
Irwin, Mrs. J. R. ..... Charlotte
*Jackson, Mrs. W. L. ..... High Point
Jenkins, Mrs. C. L. ..... Raleigh
*Johnson, Mrs. T. C. ..... Lumberton
Jones, Mrs. Beverly N. ..... Winston-Salem
Judd, Mrs. E. C. ..... Raleigh
*Keiger, Mrs. James A. ..... Greensboro
Keiger, Mrs. O. R. ..... Winston-Salem
*Kendricks, Mrs. R. C. ..... Elizabeth City
*Kent, Mrs. A. A. ..... Lenoir
Kerns, Mrs. T. C. ..... Durham
Kerr, Mrs. J. E. ..... Winston-Salem
Kornegay, Mrs. L. W. ..... Rocky Mount
Knight, Mrs. W. P. ..... Greensboro
Lattimore, Mrs. E. B. ..... Shelby
Laughinghouse, Mrs. Chas. O'H. ..... Greenville
*Lawrence, Mrs. B. J. ..... Raleigh
Lee, Mrs. S. M. ..... Sanatorium
*Linney, Mrs. R. Z. ..... Charlotte
*Linville, Mrs. A. Y. ..... Winston-Salem
Lloyd, Mrs. B. B. ..... Chapel Hill
*Long, Mrs. E. F. ..... Raleigh
*Long, Mrs. John W. ..... Greensboro
Lyon, Mrs. Brocton R. ..... Greensboro
*MacConnell, Mrs. John W. ..... Davidson
*McBrayer, Mrs. R. ..... Shelby
*McCain, Mrs. P. P. ..... Sanatorium
*McGeachy, Mrs. R. S. ..... Kinston
McGee, Mrs. J. W. ..... Raleigh
*McGougan, Mrs. J. V. ..... Fayetteville
McMillan, Mrs. E. G. ..... Maxton
McMillan, Mrs. R. D. ..... Red Springs
*McNairy, Mrs. C. Banks ..... Kinston
McNider, Mrs. Wm. deB. ..... Chapel Hill
*McPhaul, Mrs. W. A. ..... Charlotte
McPherson, Mrs. C. W. ..... Burlington
McPherson, Mrs. S. D. ..... Durham
*MacRae, Mrs. John D. ..... Asheville
Macon, Mrs. G. H. ..... Warrenton
Mann, Mrs. I. T. ..... High Point
Manning, Mrs. I. H. ..... Chapel Hill
Martin, Mrs. Lester P. ..... Mocksville
Miller, Mrs. J. F. ..... Marion
*Milliken, Mrs. J. S. ..... Southern Pines
Misenheimer, Mrs. C. A. ..... Charlotte
*Mitchell, Mrs. R. C. ..... Raleigh
Mitchener, Mrs. J. S. ..... Raleigh
*Moore, Mrs. Charles E. ..... Greensboro
Moore, Mrs. Julian A. ..... Wilmington
*Moore, Mrs. K. C. ..... Wilson
Moore, Mrs. Oren ..... Charlotte
Montgomery, Mrs. J. C. ..... Charlotte
Mudgett, Mrs. W. C. ..... Southern Pines
Munt, Mrs. H. F. ..... Winston-Salem
Murchison, Mrs. D. R. ..... Wilmington
*Murphy, Mrs. J. Gerald ..... Wilmington
Myers, Mrs. Alonzo ..... Charlotte
*Myers, Mrs. John Q. ..... Charlotte
*Nisbet, Mrs. D. Heath ..... Charlotte
Patterson, Mrs. J. R. ..... Kernersville

Perry, Mrs. D. R. ..... Durham
Person, Mrs. J. B. ..... Selma
Pittman, Mrs. R. L. ..... Fayetteville
Powell, Mrs. Albert H. ..... Durham
Rainey, Mrs. W. T. ..... Fayetteville
Rankin, Mrs. W. S. ..... Charlotte
Ransom, Mrs. J. Lester ..... Charlotte
*Ray, Mrs. John B. ..... Leaksville
*Red, Mrs. S. C. ..... Houston, Texas
Redfern, Mrs. T. C. ..... Winston-Salem
*Redwine, Miss Edith ..... Asheville
Register, Mrs. F. M. ..... Raleigh
Rigsbee, Mrs. A. E. ..... Durham
Roberson, Mrs. Foy ..... Durham
Rogers, Mrs. J. R. ..... Raleigh
Ross, Mrs. George ..... Durham
Rozier, Mrs. R. G. ..... St. Paul
*Russell, Mrs. Chas. R. ..... Granite Falls
Sadler, Mrs. R. C. ..... Whiteville
Scruggs, Mrs. Wm. Marvin Charlotte
*Sevier, Mrs. D. E. ..... Asheville
*Sevier, Mrs. J. T. ..... Asheville
Sharpe, Mrs. C. R. ..... Lexington
Sharpe, Mrs. Frank ..... Greensboro
Shore, Mrs. C. A. ..... Raleigh
Sisk, Mrs. C. N. ..... Raleigh
Slate, Mrs. J. S. ..... Winston-Salem
*Sloan, Mrs. H. L. ..... Charlotte
Smith, Mrs. William H. ..... Goldsboro
Sossoman, Mrs. J. C. ..... Midland
Speas, Mrs. D. C. ..... Winston-Salem
Speed, Mrs. Joseph A. ..... Durham
Spoon, Mrs. A. O. ..... Greensboro
Spruill, Mrs. Jos. L. ..... Jamestown
Sprunt, Mrs. W. H., Jr., Winston-Salem
*Starr, Mrs. H. F. ..... Greensboro
*Strong, Mrs. C. M. ..... Charlotte
Sutton, Mrs. W. G. ..... Seven Springs
Taylor, Mrs. F. R. ..... High Point
Thomas, Mrs. W. N. ..... Oxford
Townsend, Mrs. M. L. ..... Raleigh
Trivette, Mrs. W. A. ..... Hamptonville
Tuttle, Mrs. A. F. ..... Leaksville
*Watkins, Mrs. Geo. T., Jr., ... Durham
Watkins, Mrs. Wm. M. ..... Durham
*Way, Mrs. J. Howell ..... Waynesville
Wilkerson, Mrs. Chas. B. ..... Raleigh
Wilkerson, Mrs. T. E. ..... Raleigh
Williams, Mrs. J. H. ..... Sanatorium
*Worthington, Mrs. Frank D. Charlotte
Wright, Mrs. J. B. ..... Raleigh
Yoder, Mrs. P. A. ..... Sanatorium

During the year two County Auxiliaries have been organized. The officers and members follow:

WOMAN'S AUXILIARY TO DURHAM-ORANGE MEDICAL SOCIETY:

President—Mrs. T. C. Kerns ..... Durham
Secretary-Treasurer—Mrs. Waldo Boone ..... Durham

Abernethy, Mrs. E. A. ..... Chapel Hill
Adams, Mrs. C. A. ..... Durham
Adkins, Mrs. M. T. ..... Durham
Baynes, Mrs. R. H. ..... Durham
Bitting, Mrs. N. D. ..... Durham
Booker, Mrs. L. S. ..... Durham
Boone, Mrs. W. H. ..... Durham
Bowling, Mrs. E. H. ..... Durham
Brinkley, Mrs. H. M. ..... Durham
Bullitt, Mrs. J. B. ..... Chapel Hill
Coppridge, Mrs. W. M. ..... Durham
Hemphill, Mrs. C. H. ..... Chapel Hill
Holloway, Mrs. O. W. ..... Durham
Lloyd, Mrs. B. B. ..... Chapel Hill
Manning, Mrs. I. H. ..... Chapel Hill
McNider, Mrs. Wm. deB. ..... Chapel Hill
McPherson, Mrs. S. D. ..... Durham
Perry, Mrs. D. R. ..... Durham
Powell, Mrs. Albert H. ..... Durham
Rigsbee, Mrs. A. E. ..... Durham
Roberson, Mrs. Foy ..... Durham
Ross, Mrs. George ..... Durham
Speed, Mrs. Joseph A. ..... Durham
Watkins, Mrs. E. H. ..... Durham
Watkins, Mrs. Wm. M. ..... Durham

WOMAN'S AUXILIARY TO WAKE COUNTY MEDICAL SOCIETY

President—Mrs. J. W. McGee ..... Raleigh
Vice-President—Mrs. T. E. Wilkerson ..... Raleigh
Secretary-Treasurer—Mrs. E. C. Judd ..... Raleigh

Adams, Mrs. R. K. ..... Raleigh
Bulla, Mrs. A. C. ..... Raleigh
Bugg, Mrs. Charles R. ..... Raleigh
Campbell, Mrs. A. C. ..... Raleigh
Caviness, Mrs. Z. M. ..... Raleigh
Cheek, Mrs. C. E. ..... Fuquay Springs
Dewar, Mrs. W. B. ..... Raleigh
Gibson, Mrs. Milton R. ..... Raleigh
Hester, Mrs. J. R. ..... Raleigh
Hicks, Mrs. V. M. ..... Raleigh
Jenkins, Mrs. C. L. ..... Raleigh
Mitchener, Mrs. J. S. ..... Raleigh
Register, Mrs. F. M. ..... Raleigh
Rogers, Mrs. J. R. ..... Raleigh
Sisk, Mrs. C. N. ..... Raleigh
Townsend, Mrs. M. L. ..... Raleigh
Wright, Mrs. J. B. ..... Raleigh

PRINCIPLES OF MEDICAL ETHICS OF THE AMERICAN MEDICAL ASSOCIATION 1925

(Explanatory.—"The principles set forth in the declaration of Principles of Medical Ethics of the American Medical Association shall govern the conduct of members in their relations to each other and to the public."—Constitution and By-Laws, Medical Society of the State of North Carolina, adopted at Hot Springs, N. C., June 2, 1903; Chapter XII—Rules of Conduct. Also see report Committee on Ethics, pages 37 and 38, Trans. N. C. Med. Soc., 1903.)

PRINCIPLES OF MEDICAL ETHICS

CHAPTER I—The Duties of Physicians to Their Patients

THE PHYSICIAN'S RESPONSIBILITY

Section 1.—A profession has for its prime object the service it can render to humanity; reward or financial gain should be a subordinate consideration. The practice of medicine is a profession. In choosing this profession an individual assumes an obligation to conduct himself in accord with its ideals.

PATIENCE, DELICACY AND SECRECY

Sec. 2.—Patience and delicacy should characterize all the acts of a physician. The confidences concerning individual or domestic life entrusted by a patient to a physician and the defects of disposition or flaws of character observed in patients during medical attendance should be held as a trust and should never be revealed except when imperatively required by the laws of the State. There are occasions, however, when a physician must determine whether or not his duty to society requires him to take definite action to protect a healthy individual from becoming infected, because the physician has knowledge, obtained through the confidences entrusted to him as a physician, of a communicable disease to which the healthy individual is about to be exposed. In such a case, the physician should act as he would desire another to act toward one of his own family under like circumstances. Before he determines his course, the physician should know the civil law of his commonwealth concerning privileged communications.

PROGNOSIS

Sec. 3.—A physician should give timely notice of dangerous manifestations of the disease to the friends of the patient. He should neither exaggerate nor minimize the gravity of the patient's condition. He should assure himself that the patient or his friends have such knowledge of the patient's condition as will serve the best interest of the patient and the family.

PATIENTS MUST NOT BE NEGLECTED

Sec. 4.—A physician is free to choose whom he will serve. He should, however, always respond to any request for his assistance in an emergency or whenever temperate public opinion expects the service. Once having undertaken a case, a physician should not abandon or neglect the patient because the disease is deemed incurable; nor should he withdraw from the case for any reason until a sufficient notice of a desire to be released has been given the patient or his friends to make it possible for them to secure another medical attendant.

Chapter II.—The Duties of Physicians to Each Other and to the Profession at Large

Article I.—Duties to the Profession

MUST UPHOLD HONOR OF PROFESSION

Section 1.—The obligation assumed on entering the profession requires the physician to comport himself as a gentleman and demands that he use every honorable means to uphold the dignity and honor of his vocation, to exalt its standards and to extend its sphere of usefulness. A physician should not base his practice on an exclusive dogma or sectarian system, for "sects are implacable despots; to accept their thraldom is to take away all liberty from one's action and thought." (Nicon, father of Galen.)

MEDICAL SOCIETIES

Sec. 2.—In order that the dignity and honor of the medical profession may be upheld, its standards exalted, its sphere of usefulness extended, and the advancement of medical science promoted, a physician should associate himself with medical societies and contribute his time, energy and means in order that these societies may represent the ideals of the profession.

DEPORTMENT

Sec. 3.—A physician should be "an upright man, instructed in the art of healing." Consequently, he must keep himself pure in character and conform to a high standard of morals, and must be diligent and conscientious in his studies. "He should also be modest, sober, patient, prompt to do his whole duty without anxiety; pious without going so far as superstition, conducting himself with propriety in his profession and in all the actions of his life." (Hippocrates.)

ADVERTISING

Sec. 4.—Solicitation of patients by physicians as individuals, or collectively in groups by whatsoever name these be called, or by institutions or organizations, whether by circulars or advertisements, or by personal communications, is unprofessional. This does not prohibit ethical institutions from a legitimate advertisement of location, physical surroundings and special class—if any—of patients accommodated. It is equally unprofessional to procure patients by indirection through solicitors or agents of any kind, or by indirect advertisement, or by furnishing or

inspiring newspaper or magazine comments concerning cases in which the physician has been or is concerned. All other like self-laudations defy the traditions and lower the tone of any profession and so are intolerable. The most worthy and effective advertisement possible, even for a young physician, and especially with his brother physicians, is the establishment of a well-merited reputation for professional ability and fidelity. This cannot be forced, but must be the outcome of character and conduct. The publication or circulation of ordinary simple business cards, being a matter of personal taste or local custom, and sometimes of convenience, is not *per se* improper. As implied, it is unprofessional to disregard local customs and offend recognized ideals in publishing or circulating such cards.

It is unprofessional to promise radical cures; to boast of cures and secret methods of treatment or remedies; to exhibit certificates of skill or of success in the treatment of diseases; or to employ any methods to gain the attention of the public for the purpose of obtaining patients.

PATENTS AND PERQUISITES

Sec. 5.—It is unprofessional to receive remuneration from patents for surgical instruments or medicines; to accept rebates on prescriptions or surgical appliances, or perquisites from attendants who aid in the care of patients.

MEDICAL LAWS—SECRET REMEDIES

Sec. 6.—It is unprofessional for a physician to assist unqualified persons to evade legal restrictions governing the practice of medicine; it is equally unethical to prescribe or dispense secret medicines or other secret remedial agents, or manufacture or promote their use in any way.

SAFEGUARDING THE PROFESSION

Sec. 7.—Physicians should expose without fear or favor, before the proper medical or legal tribunals, corrupt or dishonest conduct of members of the profession. Every physician should aid in safeguarding the profession against the admission to its ranks of those who are unfit or unqualified because deficient either in moral character or education.

Article II.—Professional Services of Physicians to Each Other

PHYSICIANS DEPENDENT ON EACH OTHER

Section 1.—Experience teaches that it is unwise for a physician to treat members of his own family or himself. Consequently, a physician should always cheerfully and gratuitously respond with his professional services to the call of any physician practicing in his vicinity, or of the immediate family dependents of physicians.

COMPENSATION FOR EXPENSES

Sec. 2.—When a physician from a distance is called on to advise another physician or one of his family dependents, and the physician to whom the service is rendered is in easy financial circumstances, a compensation that will at least meet the traveling expenses of the visiting physi-

cian should be proffered. When such a service requires an absence from the accustomed field of professional work of the visitor that might reasonably be expected to entail a pecuniary loss, such loss should, in part at least, be provided for in the compensation offered.

ONE PHYSICIAN TO TAKE CHARGE

Sec. 3.—When a physician or a member of his dependent family is seriously ill, he or his family should select a physician from among his neighboring colleagues to take charge of the case. Other physicians may be associated in the care of the patient as consultants.

Article III.—Duties of Physician in Consultations

CONSULTATIONS SHOULD BE ENCOURAGED

Section 1.—In serious illness, especially in doubtful or difficult conditions, the physicians should request consultations.

CONSULTATIONS FOR PATIENT'S BENEFIT

Sec. 2.—In every consultation, the benefit to be derived by the patient is of first importance. All the physicians interested in the case should be frank and candid with the patient and his family. There never is occasion for insincerity, rivalry or envy, and these should never be permitted between consultants.

PUNCTUALITY

Sec. 3.—It is the duty of a physician, particularly in the instance of a consultation, to be punctual in attendance. When, however, the consultant or the physician in charge is unavoidably delayed, the one who first arrives should wait for the other for a reasonable time, after which the consultation should be considered postponed. When the consultant has come from a distance, or when for any reason it will be difficult to meet the physician in charge at another time, or if the case is urgent, or if it be the desire of the patient, he may examine the patient and mail his written opinion, or see that it is delivered under seal, to physician in charge. Under these conditions, the consultant's conduct must be especially tactful; he must remember that he is framing an opinion without the aid of the physician who has observed the course of the disease.

PATIENT REFERRED TO SPECIALIST

Sec. 4.—When a patient is sent to one specially skilled in the care of the condition from which he is thought to be suffering, and for any reason it is impracticable for the physician in charge of the case to accompany the patient, the physician in charge should send to the consultant by mail, or in the care of the patient under seal, a history of the case, together with the physician's opinion and an outline of the treatment, or so much of this as may possibly be of service to the consultant; and as soon as possible after the case has been seen and studied, the consultant should address the physician in charge and advise him of the results of the consultant's investigation of the case. Both these opinions are confidential

and must be so regarded by the consultant and by the physician in charge.

DISCUSSIONS IN CONSULTATION

Sec. 5.—After the physicians called in consultation have completed their investigations of the case, they should meet by themselves to discuss conditions and determine the course to be followed in the treatment of the patient. No statement or discussion of the case should take place before the patient or friends, except in the presence of all the physicians attending or by their common consent; and no opinions or prognostications should be delivered as a result of the deliberations of the consultants which have not been concurred in by the consultants at their conference.

ATTENDING PHYSICIAN RESPONSIBLE

Sec. 6.—The physician in attendance is in charge of the case and is responsible for the treatment of the patient. Consequently, he may prescribe for the patient at any time and is privileged to vary the mode of treatment outlined and agreed on at a consultation whenever, in his opinion, such a change is warranted. However, at the next consultation, he should state his reasons for departing from the course decided on at the previous conference. When an emergency occurs during the absence of the attending physician, a consultant may provide for the emergency and the subsequent care of the patient until the arrival of the physician in charge, but should no do more than this without the consent of the physician in charge.

CONFLICT OF OPINION

Sec. 7.—Should the attending physician and the consultant find it impossible to agree in their view of a case another consultant should be called to the conference or the first consultant should withdraw. However, since the consultant was employed by the patient in order that his opinion might be obtained, he should be permitted to state the result of his study of the case to the patient, or his next friend, in the presence of the physician in charge.

CONSULTANT AND ATTENDANT

Sec. 8.—When a physician has attended a case as a consultant, he should not become the attendant of the patient during that illness except with the consent of the physician who was in charge at the time of the consultation.

Article IV.—Duties of Physicians in Cases of Interference

CRITICISM TO BE AVOIDED

Section 1.—The physician, in his intercourse with a patient under the care of another physician, should observe the strictest caution and reserve; should give no disingenuous hints relative to the nature and treatment of the patient's disorder; nor should the course of conduct of the physician, directly or indirectly, tend to diminish the trust reposed in the attending physician. In embarrassing situations, or wherever there

may seem to be a possibility of misunderstanding with a colleague, the physician should always seek a personal interview with his fellow.

SOCIAL CALLS ON PATIENT OF ANOTHER PHYSICIAN

Sec. 2.—A physician should avoid making social calls on those who are under the professional care of other physicians without the knowledge and consent of the attendant. Should such a friendly visit be made, there should be no inquiry relative to the nature of the disease or comment upon the treatment of the case, but the conversation should be on subjects other than the physical condition of the patient.

SERVICES TO PATIENT OF ANOTHER PHYSICIAN

Sec. 3.—A physician should never take charge of or prescribe for a patient who is under the care of another physician, except in an emergency, until after the other physician has relinquished the case or has been properly dismissed.

CRITICISM TO BE AVOIDED

Sec. 4.—When a physician does succeed another physician in the charge of a case, he should not make comments on or insinuations regarding the practice of the one who preceded him. Such comments or insinuations tend to lower the esteem of the patient for the medical profession and so react against the critic.

EMERGENCY CASES

Sec. 5.—When a physician is called in an emergency and finds that he has been sent for because the family attendant is not at hand, or when a physician is asked to see another physician's patient because of an aggravation of the disease, he should provide only for the patient's immediate need and should withdraw from the case on the arrival of the family physician after he has reported the condition found and the treatment administered.

WHEN SEVERAL PHYSICIANS ARE SUMMONED

Sec. 6.—When several physicians have been summoned in a case of sudden illness or accident, the first to arrive should be considered the physician in charge. However, as soon as the exigencies of the case permit, or on the arrival of the acknowledged family attendant or the physician the patient desires to serve him, the first physician should withdraw in favor of the chosen attendant; should the patient or his family wish some one other than the physician known to be the family physician to take charge of the case the patient should advise the family physician of his desire. When, because of sudden illness or accident, a patient is taken to a hospital, the patient should be returned to the care of his known family physician as soon as the condition of the patient and the circumstances of the case warrant this transfer.

A COLLEAGUE'S PATIENT

Sec. 7.—When a physician is requested by a colleague to care for a patient during his temporary absence, or when, because of an emergency, he is asked to see a patient of a colleague, the physician should treat the patient in the same manner and with the same delicacy as he would have one of his own patients cared for under similar circumstances. The patient should be returned to the care of the attending physician as soon as possible.

RELINQUISHING PATIENT TO REGULAR ATTENDANT

Sec. 8.—When a physician is called to the patient of another physician during the enforced absence of that physician, the patient should be relinquished on the return of the latter.

SUBSTITUTING IN OBSTETRIC WORK

Sec. 9.—When a physician attends a woman in labor in the absence of another who has been engaged to attend, such physician should resign the patient to the one first engaged, upon his arrival; the physician is entitled to compensation for the professional services he may have rendered.

Article V.—Differences Between Physicians

ARBITRATION

Section 1.—Whenever there arises between physicians a grave difference of opinion which cannot be promptly adjusted, the dispute should be referred for arbitration to a committee of impartial physicians, preferably the Board of Censors of a component county society of the American Medical Association.

Article VI.—Compensation

LIMITS OF GRATUITOUS SERVICE

Section 1.—The poverty of a patient and the mutual professional obligation of physicians should command the gratuitous services of a physician. But endowed institutions and organizations for mutual benefit, or for accident, sickness and life insurance, or for analogous purposes, have no claim upon physicians for unremunerated services.

CONTRACT PRACTICE

Sec. 2.—It is unprofessional for a physician to dispose of his services under conditions that make it impossible to render adequate service to his patient or which interfere with reasonable competition among the physicians of a community. To do this is detrimental to the public and to the individual physician, and lowers the dignity of the profession.

SECRET DIVISION OF FEES CONDEMNED

Sec. 3.—It is detrimental to the public good and degrading to the profession, and therefore unprofessional, to give or to receive a commission. It is also unprofessional to divide a fee for medical advice or surgical treatment, unless the patient or his next friend is fully informed

as to the terms of the transaction. The patient should be made to realize that a proper fee should be paid the family physician for the service he renders in determining the surgical or medical treatment suited to the condition, and in advising concerning those best qualified to render any special service that may be required by the patient.

Chapter III.—The Duties of the Profession to the Public

PHYSICIANS AS CITIZENS

Section 1.—Physicians, as good citizens and because their professional training specially qualifies them to render this service, should give advice concerning the public health of the community. They should bear their full part in enforcing its laws and sustaining the institutions that advance the interests of humanity. They should cooperate especially with the proper authorities in the administration of sanitary laws and regulations. They should be ready to counsel the public on subjects relating to sanitary police, public hygiene and legal medicine.

PUBLIC HEALTH

Sec. 2.—Physicians, especially those engaged in public health work, should enlighten the public regarding quarantine regulations; on the location, arrangement and dietaries of hospitals, asylums, schools, prisons and similar institutions; and concerning measures for the prevention of epidemic and contagious diseases. When an epidemic prevails, a physician must continue his labors for the alleviation of suffering people, without regard to the risk to his own health or life or to financial return. At all times, it is the duty of the physician to notify the properly constituted public health authorities of every case of communicable disease under his care, in accordance with the laws, rules and regulations of the health authorities of the locality in which the patient is.

PUBLIC WARNED

Sec. 3.—Physicians should warn the public against the devices practiced and the false pretensions made by charlatans which may cause injury to health and loss of life.

PHARMACISTS

Sec. 4.—By legitimate patronage, physicians should recognize and promote the profession of pharmacy; but any pharmacist, unless he be qualified as a physician, who assumes to prescribe for the sick, should be denied such countenance and support. Moreover, whenever a druggist or pharmacist dispenses deteriorated or adulterated drugs, or substitutes one remedy for another designated in a prescription, he thereby forfeits all claims to the favorable consideration of the public and physicians.

CONCLUSION

While the foregoing statements express in a general way the duty of the physician to his patients, to other members of the profession and to the profession at large, as well as of the profession to the public, it is

not to be supposed that they cover the whole field of medical ethics, or that the physician is not under many duties and obligations besides these herein set forth. In a word, it is incumbent on the physician that, under all conditions, his bearing toward patients, the public, and fellow practitioners shoud be characterized by a gentlemanly deportment and that he constantly should behave toward others as he desires them to deal with him. Finally, these principles are primarily for the good of the public, and their enforcement should be conducted in such a manner as shall deserve and receive the endorsement of the community.

ROSTER OF MEMBERS FOR 1927

BY COUNTIES

NOTE.—Every physician in the state whose name we could secure has had an opportunity to supply correct information as to his name, postoffice, academic and medical education, date of State license and date State Society was joined. A few did not take advantage of the opportunity. Anyone finding an error should report it to the secretary of the society.

ALAMANCE-CASWELL COUNTIES SOCIETY

Name and Address	Licensed	Joined State Society
President: C. W. McPherson, Burlington; Univ. of Md., 1910	1910	1912
Secretary: R. E. Brooks, Burlington; Jeff. Med. Coll., 1920	1920	1922
Anderson, Chas. A., Burlington; Coll. P. and S., Balt., 1901	1893	1896
Braddy, Wade Hampton, Burlington; Univ. of N. C., 1909	1909	1913
Brittle, Paul C., Burlington; Univ. Coll. of Med., Richmond 1907	1907	1910
Ellington, A. J., Burlington; Columbia Univ., 1915	1915	1917
Goley, Willard Coe, Graham; Univ. of Pa., 1924	1924	1924
Goley, Wm. R., Graham (Hon.); P. and S., Balt., 1885	1885	1893
Gwyn, H. L., Yanceyville; Med. Coll. Va., 1923	1923	1925
Harden, Graham, Burlington; Univ. of Pa., 1919	1920	1922
Kernodle, Chas. E., Elon College; Univ. of Md., 1911	1911	1920
McDade, B. B., Corbett, Rt. 1; Univ. of Md., 1918	1918	1920
McPherson, R. G., Saxapahaw; Univ. of N. C., 1908	1908	1909
Malloy, S. A., Yanceyville; Ky. School of Med., 1897	1898	1903
Montgomery, Harry M., Burlington; N. C. Med. Coll., 1903	1903	1904
Moore, Henry Blanchard, Graham; Jeff. Med. Coll., 1920	1920	1923
Moser, W. D., Burlington; Univ. of N. C., 1910	1910	1910
Parker, John R., Burlington; Univ. Coll. of Med., Richmond, 1901	1901	1917
Pickett, J. A., Burlington, R. F. D. 1; Univ. of Tenn. Coll. of Med., 1894	1894	1904
Scott, S. F., Union Ridge; Univ. of Pa., 1918	1918	1920
Simpson, H. H., Altamahaw; Univ. of Md., 1925	1925	1926
Spoon, Charles E., Burlington; Univ. of Tenn., 1907	1914	1920
Spoon, S. C., Graham; Univ. of Ind., 1918	1918	1920
Troxler, R. M., Burlington; Univ. of Md., 1914	1914	1915
Tyson, T. D., Mebane; Univ. Coll. of Med., Richmond, 1899	1899	1904
Walker, L. A., Burlington; Univ. Coll. of Med., Va., 1898	1899	1905
Walker, Walter E., Burlington; Med. Coll. of Va., 1903	1903	1905
Walters, C. M., Burlington; Univ. of Md. and P. and S., Balt., 1908	1908	1909
Warren, R. F., Prospect Hill; Atlanta School of Med., 1911	1911	1919
Wilkins, J. C., Haw River; Univ. of Md., 1911	1911	1920

ANSON COUNTY

President:	------	------
Secretary: Jno. E. Hart, Wadesboro; P. and S., Balt., 1897	1897	1904
Allen, Chas. I., Wadesboro; Col. Univ., Coll. P. and S., 1913	1913	1922
Bennett, Jos. H., Wadesboro; Univ. of Md., 1894	1894	1904

Davis, J. M., Wadesboro; Columbia Univ., 1913	1913	1920
Liles, N. P., Lilesville; Med. Coll. of S. C., 1911	1911	1911
McGoogan, Benj. J., McFarlan; Univ. of Md., 1912	1912	1923

ASHE COUNTY SOCIETY

President:	-------	-------
Secretary:	-------	-------
Blevins, Manly, West Jefferson; P. and S., Balt.,	1885	1904
*Brooks, Hugh M., Whitetop, Va.,	1889	1919
Hagaman, J. B., Todd; Lincoln Mem. Univ., 1915	1915	1915
Jones, Thos. J., Lansing; Lincoln Mem. Univ., 1895	1889*	1885
Jones, T. Lester, Lansing; Va. Med. Coll., 1909	1909	1917
Ray, R. C., Beaver Creek; Med. Coll. of Va., 1916	1916	1917
Reeves, B. E., West Jefferson; P. and S., Balt., 1891	1891	1924
Robinson, W. J., Creston; Univ. Med. Coll., Kansas City, 1904	1907	1917

AVERY COUNTY SOCIETY

President: W. B. Burleson, Plumtree; Univ. of Md., 1915	1915	1916
Secretary: R. H. Hardin, Banner Elk; N. C. Med. Coll., 1914	1914	1919
Powers, J. F., Newland; Va. Med. Coll., 1925	1925	1927
Proffitt, Thos. J., Elk Park; Univ. Louisville Med. Dept., 1903	1903	1914
Sloop, Eustace H., Crossnore; N. C. Med. Coll., 1905, Jeff. Med. Coll., 1908	1905	1909
Tate, W. C., Banner Elk; Tenn. Med. Coll., 1908	1909	1912

BEAUFORT COUNTY SOCIETY

President: Lewis H. Swindell, Washington; Univ. of Pa., 1916	1916	1919
Secretary: John Cotton Tayloe, Washington; Univ. of Pa. 1922	1924	1925
Bonner, J. B., Washington; Univ. of Md.. School of Med. and Coll. P. and S., 1918	1918	1920
Brown, E. M., Washington; Bellevue Hosp. and Med. Coll. 1896	1896	1901
Carter, H. W., Washington; Univ. of Va., 1895	1895	1910
Jackson, C. C., Yeatsville; P. and S., Balt., 1893	1893	1896
Kafer, Oswald O., Edward; Univ. of Md., 1905	1905	1912
Nicholson, John L., Washington; Univ. of Md. and Coll. P. and S., 1904	1904	1904
Nicholson, P. A., Washington (Hon.); P. and S., Balt., 1889	1889	1890
Nicholson, Sam T., Washington (Hon.); P. and S., Balt., 1881	1885	1885
Rodman, J. C. (Hon.), Washington; Bellevue Med. Coll., 1892	1892	1895
Tayloe, D. T., Washington, (Hon.); Bellevue Med. Coll., 1885	1885	1885
Tayloe, D. T., Jr., Washington; Univ. of Pa., 1919	1919	1922
Tayloe, Joshua, Washington; Bellevue Med. Coll., 1892	1892	1904
Tayloe, Joshua, Jr., Washington; Univ. of Pa., 1923	1923	1926
Williams, John W., Washington; Univ. of Md., and Coll P. and S., 1906	1906	1906
Windley, C. T., Belhaven; P. and S. Balt., 1893	1893	1910

*Registered.

BERTIE COUNTY SOCIETY

President:	-------	-------
Secretary: E. P. Norfleet, Roxobel; Va. Med. Coll., 1914	1914	1920
Castelloe, Cola, Windsor; Univ. of Pa., 1917	1917	1926
Evans, L. B., Windsor; Univ. Coll. of Med., 1900	1900	1907
Garriss, Frank H., Lewiston; Jefferson Med. Coll., 1912	1912	1918
Pritchard, John L., Windsor; P. and S., Balt., 1906	1906	1908
Ruffin, J. B., Powellsville; Univ. of the South, 1898	1906	1904
Sawyer, Charles Judson, Windsor (Hon.); P. and S., Balt., 1895	1895	1897
Smith, Jos. Elmer, Windsor; Med. Coll. of Va., 1921	1921	1922

BLADEN COUNTY SOCIETY

President: D. H. Bridger, Bladenboro; Jeff. Med. Coll., 1922	1922	1925
Secretary: E. S. Clark, Clarkton; Med. Coll. of Va., 1914	1914	1915
Bennett, E. C., Elizabethtown; Med. Coll. of Va., 1926	1926	1927
Bullard, G. F., Elizabethtown; N. C. Med. Coll., 1915	1915	1916
Clark, D. D., Clarkton; Med. Coll. of Va., 1917	1917	1920
Cromartie, R. S., Garland; N. C. Med. Coll., 1900	1900	1915
Hutchinson, S. S., Bladenboro; N. C. Med. Coll. 1911	1911	1917
Singletary, G. C., Clarkton; Univ. of Pa. School of Med., 1917	1917	1918

BRUNSWICK COUNTY SOCIETY

President:	-------	-------
Secretary:	-------	-------
Goley, Wm. R., Shallotte; Univ. Coll. of Med., Richmond, 1901	1901	1904

BUNCOMBE COUNTY SOCIETY

President: John Walter Huston, Asheville; Rush Med. Coll., Chicago, 1904	1912	1913
Secretary: M. S. Broun, Asheville; Columbia Coll. of P. and S., 1919	1922	1923
Adams, J. L., Asheville; Jeff. Med. Coll., 1910	1910	1913
Alexander, Geo., Asheville; Univ. of Louisville Med. Dept., 1913	1920	1921
Ambler, Arthur C., Asheville; Jeff. Med. Coll., 1920	1921	1922
Ambler, Chase P., Asheville (Hon.); West. Reserve Univ. School of Med., 1889	1890	1891
Anderson, James G., Asheville; Univ. of N. C., 1906	1907	1910
Archer, Isaac J., Black Mountain; Northwestern Univ. Med. Sch., 1896	1905	1907
Bailey, K. H., Honolulu, Hawaii; Univ. of Penn., 1919	1919	1920
Baker, W. E., Arden; Chattanooga Med. Coll., 1908	1915	1916
Battle, Geo. C., Asheville; Univ. of Md., 1912	1912	1912
Battle, S. W., Asheville (Hon.); Bellevue Med. Coll., N. Y., 1875	1889*	1887
Beall, L. G., Black Mountain; N. C. Med. Coll., 1906; Univ. of Pa., 1911	1906	1912
Bown, Herbert H., Asheville; Columbus Med. Coll., 1892	1917	1918
Briggs, Henry H., Asheville; Yale Univ. School of Med., 1897	1901	1903

*Registered.

Brookshire, Harley G., Asheville; N. C. Med. Coll., 1905	1905	1907
Brownson, Wm. C., Asheville (Hon.); Univ. of N. Y., 1878	1881	1885
Buck, David M., Asheville; Med. Coll. of Va., 1925	1925	1927
Buckner, J. M., Swannanoa; Univ. of N. C., 1909	1909	1912
Carr, Eugene M., Asheville; Johns Hopkins Univ., 1919	1926	1927
Chambers, P. P., Asheville; Med. Coll. of S. C., 1907	1922	1923
Cheesborough, Thos. P., Asheville; Univ. of N. Y., 1891	1891	1900
Clark, Harold S., Asheville; Univ. of Pa., 1922	1922	1924
Cocke, C. H., Asheville; Cornell Univ., 1905	1912	1913
Cocke, E. R., Asheville; Jeff. Med. Coll., 1913	1914	1917
Cocke, Jere E., Asheville; Louisville Med. Coll., 1905	1905	1907
Colby, C. DeW., Asheville; Univ. of Mich., 1892; Army Med. Sch., 1895	1909	1912
Cotten, Clyde E., Asheville; Univ. of Wooster, 1889	1901	1901
Craddock, Alva B., Asheville; Johns Hopkins, 1918	1923	1924
Crow, S. L., Asheville; Emory Univ., 1925	1926	1927
Denchfield, A. L., Asheville; Univ. of N. Y., 1905	1914	1916
Dunn, Wm. L., Asheville; Univ. of Mich., 1891	1900	1900
Eckel, O. F., Asheville; Med. Coll. of S. C., 1906	1907	1909
Edwards, B. O., Asheville; N. C. Med. Coll., 1905	1905	1909
Edwards, C. P., Asheville; Tenn. Med. Coll., 1900	1903	1921
Elias, Lewis W., Asheville; Columbia Univ. Coll. of P. and S., 1903	1906	1907
Floyd, H. F., Oteen; Johns Hopkins Univ., 1923	1926	1927
Folsom, T. W., Asheville; Univ. of Pa., 1921	1921	1923
Frazer, H. Thompson, Asheville; Columbia Univ. Coll. P. and S., N. Y., 1901	1908	1909
George, John C., Asheville; Miami Med., 1906	1925	1927
Godwin, G. C., Oteen; Med. Coll. Va., 1915	1915	1920
Grantham, Wm. L., Asheville; N. C. Med. Coll., 1906	1906	1911
Greene, Jos. B., Asheville; Univ. of Va., 1893	1910	1911
Greenwood, A. B., Asheville; Johns Hopkins, 1916	1916	1918
Griffin, M. A., Asheville; Jeff. Med. Coll., 1917	1917	1918
Griffin, W. R., Asheville; Jeff. Med. Coll., 1910	1910	1917
Griffith, F. W., Asheville; Johns Hopkins, 1906	1911	1912
Griffith, L. M., Asheville; Johns Hopkins, 1915	1916	1917
Hahn, Milton, Asheville; Johns Hopkins U., 1907	1926	1927
Harrison, H. H., Asheville; Jeff. Med. Coll., 1905	1905	1918
Hensley, Chas. A., Asheville; Jeff. Med. Coll., 1917	1917	1927
Herbert, Wm. P., Asheville; Univ. of Va., 1907	1910	1911
Hipps, A. G. T., Asheville; Jeff. Med. Coll., 1916	1916	1920
Hollyday, W. M., Asheville; Univ. of Maryland, 1908	1914	1915
Huffines, T. R., Asheville; Indiana Univ. Med. Sch., 1919	1922	1923
Ivey, R. R., U. S. P. H. S., Biltmore; Univ. of Ala., 1909	1921	1921
Jordan, Charles S., Asheville; Univ. of N. Y., 1890	1891	1899
Kimberly, David, Jr., Asheville; Univ. of Cinn., 1924	1926	1927
King, Edward, Asheville; Harvard, 1917	1921	1922
Kutscher, G. W., Jr., Swannanoa; Univ. of Pittsburgh, 1923	1925	1926
Lord, Marjery J., Black Mountain; Univ. of Mich., 1916	1918	1918
Lynch, J. M., Asheville; Univ. of Md., 1904	1912	1913

MacPherson, G. S., Asheville; Medical School of Harvard Univ., 1894	1919	1920
MacRae, J. D., Asheville; Univ. of Nashville, 1897	1899	1920
McCall, A. C., Asheville; Univ. of Md., 1910	1910	1912
McClellan, W. E., Asheville; Toronto Univ., 1904	1926	1927
McCracken, C. M., Fairview; N. C. Med. Coll., 1896	1896	1904
Malone, J. Y., Asheville; Wash. Univ., 1921	1924	1924
Mears, George A., Asheville; Med. Coll. Syracuse Univ., 1924	1924	1927
Meriwether, Benj. Morsell, Asheville; U. of Louisville, 1915	1915	1924
Millander, Chas. W., Asheville; Tulane Univ., 1919	1921	1924
Minor, Chas. L., (Hon.), Asheville; Univ. of Va., 1888	1895	1898
Montgomery, Kenneth E., Asheville; Louisville Univ., 1917	1920	1927
Morgan, B. E., Asheville; Univ. of Tenn., 1917	1921	1921
Morgan, G. A., Asheville; Univ. of Tenn., 1917	1920	1925
Murphy, Gibbons W., Asheville; Emory Univ., 1923	1923	1927
Norburn, Chas. S., Asheville; Univ. of Va., 1917	1921	1924
Norburn, R. L., Asheville; Vanderbilt Univ., 1925	1925	1927
Ogilvie, Hanson S., Asheville; Med. Coll. Va., 1909	1926	1927
Orr, Chas. C., Asheville; Univ. of Md., 1904	1904	1905
Orr, P. B., Asheville; Jeff. Med. Coll., 1901	1901	1904
Parker, Geo. F., Asheville; Univ. of Pa., 1923	1924	1926
Pendleton, Wilson, Asheville; Univ. of Va., 1908	1919	1920
Pritchard, Arthur T., Asheville; Jeff. Med. Coll., 1905	1905	1907
Pritchard, G. L., Black Mountain; Univ. Coll. of Med., Richmond, 1913	1913	1926
Reeves, A. F., Asheville; Geo. Washington Univ., 1906	1909	1910
Reeves, R. J., Leicester; Vanderbilt Univ., 1913	1913	1922
Reynolds, C. V., Asheville (Hon.); Univ. of N. Y., 1895	1895	1896
Richardson, F. H., Black Mountain; Cornell Univ. Med. Coll., 1906	1919	1920
Ringer, Paul H., Asheville; Columbia Univ. P. and S., N. Y., 1904	1906	1907
Ross, Geo. Floyd, Asheville; Univ. of Pa., 1907	1908	1926
Schaffle, Karl, Asheville; Univ. of Pa., 1907	1926	1927
Schoenheit, E. W., Asheville; Jeff. Med. Coll., 1920	1920	1921
Scott, R. C., Asheville; Jeff. Med. Coll., 1902	1916	1919
Sevier, D. E., Asheville; Jeff. Med. Coll., 1895	1895	1899
Sevier, J. T., Asheville; Jeff. Med. Coll., 1895	1895	1899
Smith, B. R., Asheville; Jeff. Med. Coll., 1911	1913	1914
Sprinkle, C. N., Weaverville; Jeff. Med. Coll., 1910	1910	1922
Stahlman, Fred C., Asheville; Univ. Pittsburgh, 1896	1926	1927
Stevens, M. L., Asheville (Hon.); Balt. Med. Coll., 1891	1892	1893
Tennent, G. S., (Hon.) Asheville; N. C. Med. Coll., 1894	1894	1898
Terry, George H. B., Oteen; Jeff. Med. Coll., 1895	1923	1927
Terry, P. R., Asheville; George Washington Univ., 1907	1912	1913
Thompson, A. C., Asheville; Georgetown Univ., 1911	1921	1922
Toole, A. F., Asheville; Univ. of Va., 1900	1917	1918
Wanstrom, Ruth, Asheville; Univ. of Mich., 1918	1920	1926
Ward, John LaB., Asheville; Med. Coll. of S. C., 1905	1921	1922
Watkins, John A., Asheville; Tulane University, 1910	1925	1926

Weaver, H. B., Asheville (Hon.); Washington Univ., Balt., 1872	1881	1882
Weaver, W. J., Asheville; Jeff. Med. Coll., 1898	1897	1915
White, R. A., Asheville; Univ. Cin. Coll. of Med., 1918	1920	1921
Whittington, W. P., Asheville (Hon.); P. and S., Balt., 1882	1882	1882
Wier, J. E., Asheville; Indiana University, 1913	1925	1926
Wiest, Paul F., Asheville; University of Md., 1921	1925	1925
Williams, L. L., Asheville; Med. Coll. of S. C., 1880	1924	1927
Willis, A. P., Candler; Univ. of N. C., 1904	1904	1919
Wilson, R. G., Biltmore; Univ. of Pa., 1919	1919	1921
Woodcock,, John H., Hendersonville; Hosp. Coll. of Med., Louisville, 1892	1894	1899
Woodward, J. G., Asheville; Univ. of Pa., 1925	1925	1927

BURKE COUNTY SOCIETY

President: R. H. Long, Morganton; Jeff. Med. Coll., 1916	1916	1923
Secretary: G. M. Billings, Morganton; Tulane Univ. of La., 1919	1919	1920
Kibler, W. H., Morganton; Univ. of Pa., 1914	1914	1918
Kirksey, James J., Morganton; Univ. of Pa., 1921	1921	1923
Long, Benj. L., Glen Alpine; N. C. Med. Coll., 1913	1913	1914
McCampbell, John, Morganton; Balt. Med. Coll., 1894	1895	1899
Phifer, Edward M., Morganton; N. C. Med. Coll., 1902	1902	1904
Riddle, J. B., Morganton; Vanderbilt Univ., 1898	1904	1904
Taylor, E. H. E., Morganton; Tulane Univ. La., 1924	1924	1925
Vernon, Jas. W., Morganton; Jeff. Med. Coll., 1909	1909	1913
Watkins, F. B., Morganton; Jeff. Med. Coll., 1907	1907	1910

CABARRUS COUNTY SOCIETY

President: S. E. Buchanan, Concord; N. C. Med. Coll., 1912	1912	1914
Secretary: J. A. Hartsell, Concord; Jeff. Med. Coll., 1912	1914	1916
Bangle, J. A., Concord; N. C. Med. Coll., 1916	1916	1919
Bunn, J. J., Mt. Pleasant; N. C. Med. Coll., 1912	1913	1915
Burleyson, L. N., Concord; Univ. of Md., 1891	1891	1906
Caldwell, D. G., Concord; Univ. of Pa., 1923	1925	1925
Flowe, R. Frank, Kannapolis; N. C. Med. Coll., 1913	1914	1915
Gouger, Geo. J., Concord; Univ. of Md., 1891	1891	1899
Howard, J. R., Concord; Med. Coll. Va., 1924	1924	1925
King, Richard M., Concord; Jeff. Med. Coll., 1903	1903	1907
Lubchenko, N. E., Harrisburg; N. C. Med. Coll., 1915	1915	1916
MacFadyen, Paul R., Concord; Univ. Coll. of Med., Richmond, 1901	1901	1904
Nolan, J. V., Kannapolis; Jeff. Med. Coll., 1921	1921	1922
Patterson, John A., Concord; Univ. Coll. of Med., Richmond, 1911	1911	1912
Pemberton, Wm. D., Concord (Hon.); Univ. of Md., 1887	1887	1887
Rankin, R. B., Kannapolis; Tulane Univ. of La., 1917	1920	1922
Rankin, S. W., Concord; Jeff. Med. Coll., 1912	1912	1914
Reed, John F., Concord; Univ. of N. Y., 1893	1907	1912
Smoot, J. E., Concord; Balt. Med. Coll., 1893	1894	1902

Sossoman, J. C., Midland; N. C. Med. Coll., 1915	1917	1918
Wadsworth, Wm. H., Concord; Jeff. Med. Coll., 1913	1913	1913
Yow, I. A., Georgeville; N. C. Med. Coll., 1906	1906	1910

CALDWELL COUNTY SOCIETY

President: A. B. Goodman, Lenoir; N. C. Med. Coll., 1898	1897	1910
Secretary: Clyde R. Hedrick, Lenoir; Georgetown Med. School, 1925	1925	1926
Coffey, Lawrence H., 911 E. Main St., Lakeland, Fla.; Va. Med. Coll., 1906	1906	1913
Corpening, O. J., Granite Falls; Univ. Coll. of Med., Va., 1906	1906	1907
Hickman, M. T., Hudson; Univ. of Va., 1909	1909	1910
Houck, Albert, Lenoir (Hon.); P. and S. Balt., 1884	1891	1893
Kent, Alfred A., (Hon.) Winter Pk., Fla.; Jeff. Med. Coll., 1885	1885	1897
McNairy, Caroline, Lenoir; Woman's Med. Coll., Pa., 1917	1917	1919
McNairy, C. Banks, Lenoir; P. and S. Balt., 1893	1893	1905
Petrie, Rob't. M., Lenoir; Univ. of Md., 1903	1903	1903
Pitts, W. I., Lenoir; Univ. of the South, Sewanee, 1903	1911	1913
Rudisill, J. D., Lenoir; Univ. of Md., 1922	1922	1923
Russell, C. R., Granite Falls; Univ. Coll. of Med., Richmond, 1909	1909	1918
Wilson, Clarence L., Lenoir; U. S. Grant Univ., 1903	1903	1905
White, W. M., Lenoir; Atlanta P. and S., 1899	1899	1905

CARTERET COUNTY SOCIETY

President: K. P. B. Bonner, Morehead City; Med. Coll. of Va., 1905	1905	1905
Secretary: T. C. Britt, Beaufort; Jeff. Med. Coll., 1921	1921	1925
Braswell, Wm. Edgar, Marshallberg; Univ. of Ga., 1907	1925	1926
Davis, George, Beaufort; Kentucky School of Med., 1894	1896	1904
Davis, J. J., Mashallberg; Univ. of Md., 1891	1891	1916
Ferebee, C. G., Morehead City; Med. Coll. of Va., 1902	1904	1904
Hyde, Francis Edward, Beaufort; West. Res. Univ., 1920	1925	1926
Mason, Manly, Newport; Tulane University, 1924	1924	1925
Maxwell, C. S., Beaufort; Univ. of the South, Sewanee, 1900	1899	1904
Royal, Ben F., Morehead City; Jeff Med. Coll., 1909	1909	1909
Thompson, S. W., Jr., Morehead City; Va. Med. Coll., 1913	1915	1922
Whitehurst, E. B., Beaufort; Med. Coll. Va., 1915	1917	1920

CASWELL COUNTY SOCIETY

(See Alamance-Caswell)

CATAWBA COUNTY SOCIETY

President: H. C. Menzies, Hickory; N. C. Med. Coll., 1894	1894	1899
Secretary: Robt. T. Hambrick, Hickory; Univ. of Tulane, 1923	1923	1824
Blackburn, T. C., Hickory; Balt. Med. Coll., 1896	1896	1909
Cochrane, J. D., Newton; Univ. of Md., 1912	1912	1923
Flippin, J. M., Hickory; Coll. P. and S. Md., 1884	1893*	1926
Flowers, G. E., Hickory; Sou. Med. Coll., Atlanta, 1884	1889*	1904

*Registered.

Foard, F. T., Hickory; Louisville Med. Coll., 1886	1886	1904
Fresh, W. M., Hickory;	.....	1927
Frye, Glenn R., Hickory; Jeff. Med. Coll., 1921	1921	1923
Hunsucker, Chas. R., Hickory; N. C. Med. Coll., 1913	1913	1915
Klutz, A. F., Maiden; Jeff. Med. Coll., 1917	1917	1920
*Klutz, P. J., Maiden	1889	1916
Larkin, E. W., Hickory; N. C. Med. Coll., 1917	1917	1920
Long, Fred Y., Catawba; Balt. Med. Coll., 1898; N. C. Med. Coll.,	1898	1898
Long, Glenn, Newton; N. C. Med. Coll., 1912	1912	1915
Menzies, H. H., Hickory; Med. Coll. Va., Richmond, 1923	1923	1926
Nowell, S. C., Hickory; Univ. of Pa., 1921	1922	1924
Shuford, Jacob H., Hickory; Univ. of Mich., 1901	1902	1902
Speas, W. P., Hickory; Univ. of Maryland, 1911	1911	1919
Stevenson, F. T., Hickory; Louisville Med. Coll., 1893	1893	1907
Stillwell, H. C., Maiden; Jeff. Med. Coll., 1925	1925	1927
West, Geo. Harris, Newton; Univ. of N. Y., 1872	1880	1889

CHATHAM COUNTY SOCIETY

President: J. D. Edwards, Siler City (Hon.); Louisville Med. Coll., 1887	.....	1894
Secretary: J. E. Cathel, Moncure; Univ. of Md., 1889	1902	1906
Byrd, W. C., Morrisville, Route No. 1; Jeff. Med. Coll., 1923	1923	1924
Chapin, Wm. Burdette, Pittsboro; Univ. of N. C., 1909	1909	1910
Denson, H. A., Bennett; Central Coll. P. and S., Indianapolis, 1887	1913	1913
Fields, R. M., Goldston	.....	1911
Gyles, Ronald C., Siler City; Jeff. Med. Coll., 1917	1922	1924
Palmer, R. W., Gulf; Louisville Med. Coll., 1890	.....	1891
Thomas, W. C., Siler City; Va. Med. Coll., 1917	1917	1920
Upchurch, C. G., Apex; Univ. of Md., 1906	1907	1922

CHEROKEE COUNTY SOCIETY

President: B. G. Webb, Andrews; Louisville Med. Coll., 1885	1885	1885
Secretary: Wm. C. Morrow, Andrews; Atlanta School of Med., 1909	1909	1909
Adams, Edw. E., Murphy; Jeff. Med. Coll., 1923	1923	1924
Adams, N. B., Murphy; Tenn Med. Coll., 1896	1909	1909
Herbert, Fred L., Andrews; Tenn. Med. Coll., 1904	1912	1912
Hill, J. N., Murphy; Univ. of Louisville, 1909	1909	1909
Tidwell, J. E., Andrews; Chattanooga Med. Coll., 1903	1909	1915
Young, G. McD., Postell; Lincoln Mem. Univ. 1916	1917	1918

CHOWAN-PERQUIMANS COUNTIES SOCIETY

President:	.....	.....
Secretary:	.....	.....
Blanchard, T. W., Hobbsville; Med. Coll., of Va., 1911	1911	1919
Brinn, T. P., Hertford; Univ. of Pa., 1923	1923	1927
Cox, Thomas A., Hertford; Univ. of Md., 1885	1907	1918

*Registered.

Davenport, C. A., Hertford; Univ. of Md., 1924	1924	1926
Dillard, Richard, Jr., Edenton (Hon.); Jeff. Med. Coll., 1879	1880	1880
Powell, Jesse A., Edenton; Coll. Phys. and Surg., Balt., 1907	1908	1909
Smith, Robt. W., Hertford; Univ. of Md., 1892	1892	1918
Warren, John W., Edenton; Univ. Coll. Med., Richmond, 1907	1907	1926
Whichard, M. P., Edenton; Univ. of Md., 1910	1910	1918
Williams, L. P., Edenton; Bellevue Med. Coll., 1918	1919	1921

CLEVELAND COUNTY SOCIETY

President: W. F. Mitchell, Shelby; Univ. of Md., 1889	1900	1904
Secretary: Sam M. Schenk, Shelby; Univ. of Pa., 1923	1923	1926
Aydlette, Jos. P., Earl; Kentucky University, 1901	1903	1903
Ellis, R. C., Shelby (Hon.); Balt. Univ. Med. School, 1886	1889*	1891
Gibbs, E. W., Shelby; Univ. of N. C., 1907	1907	1918
Gold, Ben, Shelby; P. and S., Balt., 1920	1920	1922
Gold, T. B., Shelby; N. C. Med. Coll., 1911	1911	1915
Hamrick, J. Y., Jr., Boiling Springs; Columbia Univ. 1915	1915	1917
Hamrick, T. G., Shelby; P. and S., Balt., 1895	1895	1904
Harbison, J. W., Shelby; Johns Hopkins, 1919	1919	1924
Houser, E. A., Shelby; Chattanooga Med. Coll., 1898; Balt. Univ., 1902	1902	1904
Lackey, F. H., Fallston; Univ. of Md., 1915	1915	1920
Lattimore, E. B., Shelby; Bellevue Med. Coll., 1897	1896	1904
Lee, Lawrence V., Lattimore; Emory Univ. School of Med. 1894	1897	1904
Lowry, Sidney Allen, King's Mountain; Univ. Tenn., 1900	1925	1927
McBrayer, R., Shelby; Univ. of Pa., 1916	1916	1917
Moore, D. F., Shelby; Jeff. Med. Coll., 1925	1925	1925
Oates, George, Grover; Univ. of Louisville, 1894	1902	1904
Royster, S. S., Shelby; Tenn. Med. Col., 1891	1896	1904
Sherrill, H. R., Lawndale; Univ. of Tenn., 1926	1926	1927
Wood, J. W., Boiling Springs; Louisville Med. Coll., 1892	1901*	1900

COLUMBUS COUNTY SOCIETY

President: G. S. Cox, Tabor; N. C. Med. Coll., 1911	1911	1914
Secretary: Floyd Johnson, Whiteville; Memphis Hosp. Med. Coll., 1903	1903	1904
Baggett, Leaman, Whiteville; N. C. Med. Coll., 1907	1907	1909
Barefoot, Graham B., Chadbourn; Jefferson Med. Coll., 1923	1923	1924
Crowell, W. H., Whiteville; Univ. of Md., 1895	1895	1908
Elliott, G. D., Fair Bluff; Univ. of Pa., 1923	1923	1926
Floyd, L. D., Cerro Gordo; N. C. Med. Coll., 1911	1911	1912
Formyduval, T., Bolton; Va. Med. Coll., 1919	1920	1922
Maxwell, H. B., Whiteville; Univ. of Md., 1902	1902	1902
Moore, T. V., Acme; Balt. Med. Coll., 1901	1901	1911
Roberts, Bryan N., Boardman; Univ. of Md. Sch. Med., 1925	1925	1926
Sadler, R. C., Whiteville; N. C. Med. Coll., 1912	1912	1915
Smith, W. F., Chadbourn; N. C. Med. Coll., 1904	1904	1905

*Registered.

Whitaker, R. B., Whiteville; Univ. Coll. of Med., Richmond, 1912	1912	1913
Williams, Wm. Norman, Tabor; Med. Coll. of Va., 1924	1924	1925

CRAVEN COUNTY SOCIETY

President: Christopher S. Barker, New Bern; Jeff. Med. Coll. 1909	1909	1924
Secretary: D. E. Ford, New Bern, Univ. of Mich., 1908	1925	1924
Ball, M. W., New Bern; Atlanta Sch. of Med., 1909	1909	1913
Bender, E. L., New Bern; Med. Coll. Va., 1916	1916	1916
Caton, Geo. A., New Bern; Va. Med. Coll., 1898	1898	1904
Daniels, R. L., New Bern; Med. Coll. of Va., 1912	1912	1919
Duffy, R. N., New Bern; Johns Hopkins, 1906	1907	1908
Duffy, Leinster, New Bern; P. and S. Baltimore, 1889	1888	1888
Duguid, James, Dover; N. C. Med. Coll., 1905	1906	1912
Gibbs, N. M., New Bern; Univ. of Md. and Coll. P. and S. Balt., 1896	1895	1897
Jones, R. Duval, New Bern; Univ. of Md., 1896	1897	1897
Latham, Joseph R., New Bern; Jeff. Med. Coll., 1917	1917	1923
Patterson, Joseph F., New Bern; Jeff. Med. Coll., 1906	1906	1906
Pollock, Raymond, New Bern; Jefferson Med. Coll., 1897	1900	1900
Primrose, R. S., New Bern; Bellevue, 1890	1890	1925
Taylor, H. A., New Bern; Univ. of Ala., 1912	1923	1924
Wadsworth, H. B., New Bern; Johns Hopkins, 1918	1918	1923

CUMBERLAND COUNTY SOCIETY

President: J. D. Highsmith, Fayetteville; Jeff. Med. Coll. 1918	1918	1920
Secretary: O. L. McFadyen, Fayetteville; N. C. Med. Coll., 1912	1912	1912
Allgood, R. A., Fayetteville; Univ. of Md. and Coll. of P. and S., Balt., 1912	1915	1917
Averitt, K. G., Cedar Creek; Balt. Med. Coll., 1893	1893	1902
Blakey, R. A., Fayetteville; Med. Coll. of Va., 1924	1925	1925
Boyer, Maj. Gouveneur H., Fort Bragg; Amherst Coll., 1903	.....	1927
Bullock, Thomas C., Autryville; P. and S., Balt., 1885	1885	1905
Chester, P. J., Fayetteville; N. C. Med. Coll., 1913	1913	1920
Coats, Maj. Edward A., Fort Bragg; Tufts Coll., 1911	.....	1927
Cook, H. L., Fayetteville; Jeff. Med. Coll., 1918	1918	1920
Currie, D. S., Parkton; N. C. Med. Coll., 1906	1906	1907
Gainey, John W., Fayetteville; Jeff. Med. Coll., 1917	1917	1921
Highsmith, J. F., Fayetteville (Hon.); Jeff. Med. Coll., 1889	1889	1893
Highsmith, Seavy, Fayetteville; Univ. Coll. of Med., Richmond, 1901	1901	1902
Jordan, Wm. S., Fayetteville; Univ. of N. C., 1906	1906	1907
Kirksey, W. A., Hope Mills; Washington Univ., 1921	1921	1924
Lieberman, Capt. John F., Fort Bragg; Tulane Univ.,	.....	1927
Lilly, James M., Fayetteville; Univ. Coll. of Med., Richmond, 1903	1903	1904
McAndrew, Lt. Col. P. H., Fort Bragg; Univ. of Pa., 1893	.....	1924
McGougan, J. V., Fayetteville; Univ. of Md. and Coll. of P and S., 1893	1893	1909

McKay, W. P., Fayetteville; Tulane Univ., 1916	1916	1921
McNeill, Jas. Wm., Fayetteville (Hon.); Bellevue Med. Coll., 1876	1876	1876
Malcolm, Capt. Robt., Fort Bragg; N. Y. Univ. and Bellevue Hosp., 1910	.....	1927
Olive, P. W., Fayetteville; P. and S., Balt., 1907	1907	1909
Pittman, R. L., Fayetteville; Jefferson Med. Coll., 1910	1910	1912
Rainey, W. T., Fayetteville; Univ. Coll. of Med., Richmond, 1913	1913	1916
Robertson, J. N., Fayetteville; Med. Coll. of Va., 1923	1923	1924
Shaw, J. A., Fayetteville; Univ. Pa., 1923	1923	1926
Verdery, W. C., Fayetteville; Univ. of Ga., 1915	1920	1921
West, T. M., Fayetteville; Univ. of Md., 1908	1910	1910

CURRITUCK COUNTY SOCIETY

President: J. M. Newbern, Jarvisburg; Georgetown Univ., Washington, 1898	1899	1900
Secretary:	.....	.....
Cowell, Wm. H., Shawboro; Ky. School of Med., 1893	1909	1911
Griggs, W. T., Poplar Branch; Univ. of Va., 1896	1896	1901

DAVIDSON COUNTY SOCIETY

President: C. R. Sharpe, Lexington; Jeff. Med. Coll., 1914	1914	1917
Secretary: Grover C. Gambrell, Lexington; Univ. of Ga., 1912	1923	1924
Buchanan, E. J., Lexington; Univ. of Md., 1892	1892	1900
Clodfelter, C. M., Lexington; P. and S., Balt., 1905	1905	1907
Clyatt, Claude Eugene, Denton; Univ. of Ga., 1911	1923	1924
Farrington, R. K., Thomasville; Univ. of Cinn., 1925	1925	1927
Hill, W. Lee, Lexington, Rt. 4; P. and S., Balt., 1893	1893	1904
Hobgood, J. E., Thomasville; Jeff. Med. Coll., 1907	1907	1917
Hunt, W. Bryce, Lexington; Univ. of Md., 1923	1923	1924
Jennings, R. G., Thomasville; N. C. Med. Coll., 1913	1913	1920
Julian, Chas. A., Greensboro (Hon.); Louisville Med. Coll., 1888	1891	1892
Lancaster, F. J., Lexington; Jeff. Med. Coll., 1922	1922	1924
Mock, Frank Lowe, Lexington, Rt. 3; N. C. Med. Coll., 1908	1908	1911
Phillips, C. H., Thomasville; Balt. Univ. School of Med., 1892	1893	1911
Smith, J. A., Lexington; N. C. Med. Coll., 1915	1915	1917
Sowers, Jacob L., Lexington; Univ. of Md., 1921	1921	1924
Terry, J. R., Lexington; Univ. of Louisville, 1911	1912	1912
Vestal, Willis J., Lexington (Hon.); P. and S., Balt., 1883	1889*	1893
Yokeley, R. V., Thomasville; N. C. Med. Coll., 1911	1911	1912
Zimmerman, Robt. U., Lexington, Rt. 4; N. C. Med. Coll., 1901	1901	1904

DAVIE COUNTY SOCIETY

President: W. C. Martin, Mocksville; P. and S., Balt., 1888	1888	1904
Secretary: A. B. Byerly, Cooleemee; Univ. College of Med., Richmond, 1896	1896	1904
Harding, S. A., Mocksville; N. C. Med. Coll., 1910	1910	1913

*Registered.

Martin, Lester P., Mocksville; Jeff. Med. Coll., 1920	1920	1921
Rodwell, Jno. W., Mocksville; P. and S., Balt., 1895	1895	1896

DUPLIN COUNTY SOCIETY

President: J. W. Farrior, Warsaw; Univ. of Pa., 1912	1913	1917
Secretary: J. W. Straughan, Warsaw; Med. Coll. of Va., 1924	1924	1925
Carr, Ransom Lee, Rose Hill; Balt. Med. Coll., 1907	1908	1909
Carroll, John W., Wallace; Univ. of Md., 1903	1903	1903
Landen, J. F., Chinquapin; Univ. Coll. of Med., Richmond 1905	1905	1907
Maxwell, J. F., Pink Hill	1889*	1917
Morton, J. X., Faison; N. C. Med. Coll., 1915	1915	1922
Quinn, Robert F., Magnolia; N. C. Med. Coll., 1912	1913	1916
Reed, D. H., Kenansville; Geo. Washington Univ., 1901	1904	1917
Robinson, J. D., Wallace; Univ. of Md., 1915	1915	1917
Williams, Jas. M., Warsaw; Univ. of Md., 1902	1902	1902
Williams, R. C., Wallace; Univ. of Md., 1912	1915	1916

DURHAM-ORANGE COUNTIES SOCIETY

President: G. T. Watkins, Durham; Jeff. Med. Coll., 1915	1915	1917
Secretary: W. B. McCutcheon, Durham; Med. Coll. of Va., 1921	1921	1924
Abernethy, E. A., Chapel Hill; Univ. Coll. of Med., Richmond, 1901; Geo. Wash. Univ., 1903	1901	1914
Adams, C. A., Durham; P. and S., Balt., 1892	1892	1901
Adkins, M. T., Durham; Johns Hopkins, 1907	1915	1916
Bass, H. H., Durham; Univ. Coll. of Med., 1899	1899	1900
Baynes, R. H., Durham; Univ. of Md., 1914	1914	1920
Bitting, Numa D., Durham; Jeff. Med. Coll., 1907	1907	1909
Boddie, Needham P., Durham (Hon.); P. and S., Balt., 1883	1883	1883
Booker, Lyle S., Durham; Va. Univ. Med. Coll., 1908	1910	1911
Boone, W. H., Durham; N. C. Med. Coll., 1902	1902	1910
Boone, W. W., Durham; Jeff. Med. Coll., 1923	1923	1925
Bowles, Francis N., Durham; Med. Coll. of Va., 1924	1924	1926
Brinkley, H. M., Durham; Jeff. Med. Coll., 1919	1919	1923
Brooks, B. U., Durham; Univ. of Md., 1905	1905	1907
Bullitt, J. B., Chapel Hill; Univ. of Va., 1897	1914	1915
Campbell, A. S., Durham; Chicago Coll. Med. and Surg., 1917	1923	1924
Carrington, G. L., Durham; Johns Hopkins, 1920	1920	1925
Coppridge, W. M., Durham; Jeff. Med. Coll., 1918	1919	1920
Darden, O. B., Westbrook Sanatorium, Richmond, Va.; Med. Coll. of Va., 1918	1920	1920
Fassett, Burton W., Durham; Balt. Med. Coll., 1898	1899	1909
Felts, Robert L., Durham; Univ. of Md., 1898	1899	1909
Goudge, Mabel E., West Durham; Ohio State Univ., 1922	1925	1927
Graham, Joseph, Durham; Univ. of Pa., 1901	1902	1906
Hardee, W. P., Durham; Jeff. Med. Coll., 1912	1912	1924
Hayes, R. B., Hillsboro; Univ. of Md., 1906	1910	1917
Hicks, Calvin S., Durham; Univ. of Md., 1904	1904	1904
Holloway, O. W., Durham; Med. Coll. of Va., 1901	1901	1917

*Registered.

Holloway, Robt. Lee, West Durham; Va. Med. Coll., 1893	1893	1901
Johnson, N. M., Durham (Hon.); Wash Univ. Sch. of Med. 1877	1889*	1879
Kerns, T. C., Durham; Univ. of Pa., 1911	1911	1912
Lawson, R. B., Chapel Hill; Univ. of Va., 1903	1915	1920
Lloyd, B. B., Chapel Hill; Univ. of N. C., 1909	1909	1914
MacNider, Wm. deB., Chapel Hill; Univ. of N. C., 1903	1903	1903
McPherson, S. D., Durham; Univ. of Md., 1903	1903	1912
Mangum, C. S., Durham; Jeff. Med. Coll., 1894	1896	1898
Manning, I. H., Chapel Hill; Long Island Coll. Hosp., N. Y., 1897	1899	1901
Manning, Jno. M., Durham (Hon.); Bellevue Med. Coll., 1882	1884	1884
Markham, Blackwell, Durham; Harvard Med. Coll., 1922	1922	1925
Montague, S. J., Durham; Bellevue Hosp. Med. Coll., 1872	1880	1922
Nichols, Rhodes E., Durham, Rt. 8; Va. Med. Coll., Rich., 1890	1890	1904
Patrick, J. E., Bahama; Univ. Coll. of Med., Va., 1900	1900	1917
Perry, D. R., Durham; Jeff. Med. Coll., 1919	1919	1922
Powell, Albert H., Durham; Univ. of Ga., 1924	1925	1925
Riggsbee, A. E., Durham; Univ. of N. C., 1909	1909	1911
Roberson, Foy, Durham; Jeff. Med. Coll., 1909	1909	1912
Roberts, B. W., Durham;	1924	1927
Ross, Geo. H., East Durham; Univ. of Tenn., 1899	1899	1904
Ross, Robert A., Durham; Univ. of Pa., 1922	1922	1925
Schuler, J. E., East Durham; Med. Coll. of Va., 1914	1920	1922
Smith, Annie T., Durham; Univ. of Ill., 1923	1925	1926
Smith, F. C., Durham; Jeff. Med. Coll., 1921	1921	1925
Speed, J. A., Durham; Jeff. Med. Coll., 1914	1914	1916
Spikes, N. O., Durham;	1924	1927
Stanford, Lois Foote, Durham; Univ. of Pa., 1921	1923	1924
Stanford, W. R., Durham; Univ. of Pa., 1919	1919	1923
Stoner, I. J., West Durham; Memphis Med. Coll., 1898	1921	1922
Strowd, W. A., Durham; Univ. of N. C., 1909	1909	1926
Sweaney, H. M., Durham; Univ. of Pa., 1919	1919	1920
*Sweany, John, Durham; P. and S. Balt., 1886	1889	1916
Toy, Calvert R., Chapel Hill; Univ. of Pa., 1923	1923	1926
Tyler, E. R., Durham;		1927
Upchurch, R. W., Durham; Univ. of Va., 1925	1925	1927
Waring, E. S., Durham; Harvard, 1918	1922	1923
Watkins, W. M., Durham; Jeff. Med. Coll., 1923	1923	1925

EDGECOMBE COUNTY SOCIETY

President: Wm. W. Green, Tarboro; Univ. of N. C., 1908	1908	1910
Secretary: A. C. Norfleet, Tarboro;		1927
Baker, J. M., Tarboro (Hon.); Univ. of Md., 1879	1879	1879
Barber, Y. M., Macclesfield; Univ. of Md., 1914	1917	1918
Bass, Spencer P., Tarboro; Univ. of Va., 1906	1907	1909
Harrell, Samuel N., Tarboro; Univ. of Md., 1897	1897	1904
Lane, M. E., Pinetops; Jeff. Med. Coll., 1921	1921	1922
Norfleet, L. E., Tarboro; Columbia Univ. P. and S., 1889	1890	1920

*Registered.

Raby, J. G., Tarboro; Univ. Coll. of Med., Va., 1911	1911	1912
Royster, Thos. H., Tarboro; Univ. Coll. of Med., 1908	1908	1914
Thigpen, William J., Tarboro; Jeff. Med. Coll., 1900	1900	1901
Wooten, Amos Monroe, Pinetops; Univ. of N. C., 1910	1910	1911

FORSYTH COUNTY SOCIETY

President: R. L. Wall, Winston-Salem; Jeff. Med. Coll., 1912	1912	1914
Secretary: T. C. Redfern, Winston-Salem; L. I. Med. Coll. Hosp., 1916	1921	1921
Ader, O. L., Walkertown; Univ. of Penn., 1925	1925	1927
Belton, J. F., Winston-Salem; Univ. of Pa., 1914	1914	1916
Benbow, J. T., Winston-Salem; N. C. Med. Coll., 1910	1910	1920
Bowers, M. A., Winston-Salem; Tulane Univ., 1911	1911	1914
Butler, Leroy J., Winston-Salem; Med. Coll. of Va., 1915	1920	1921
Bynum, John, Winston-Salem (Hon.); Univ. of N. Y., 1892	1892	1893
Carlton, Romulus L., Winston-Salem; Univ. of Md., 1906	1906	1908
Casstevens, J. C., Clemmons; Va. Med. Coll., 1926	1926	1927
Cooke, G. C., Winston-Salem; Univ. of Md., 1919	1919	1920
Couch, V. F., Winston-Salem; P. and S., New York, 1911	1911	1919
Craig, S. D., Winston-Salem; Tulane Univ., 1908	1911	1912
Dalton, D. N., Winston-Salem (Hon.); Univ. of N. Y., 1881	1885	1885
Dalton, Wm. N., Winston-Salem; N. C. Med. Coll., 1904	1904	1905
Daugherty, J. E., Brooklyn, N. Y.; Barnes Med. Coll., 1902	1920	1920
Davis, Thos. W., Winston-Salem; S. C. Med. Coll., 1898	1899	1900
Edwards, A. D., Winston-Salem; Univ. of Md., 1903	1904	1905
Fearington, Jos. P., Winston-Salem; Univ. of Md., 1887	1887	1904
Flynt, S. S., Rural Hall; P. and S., Balt., 1889	1890	1907
Gray, Eugene Price, Winston-Salem; Johns Hopkins, 1906	1907	1909
Grimes, W. L., Winston-Salem; Johns Hopkins, 1910	1910	1915
Hanes, F. M., Winston-Salem; Johns Hopkins, 1908	1916	1917
Hege, J. Roy, Winston-Salem; Univ. of Md., 1916	1916	1917
Hurdle, S. W., Winston-Salem; Jeff. Med. Coll., 1914	1914	1916
Izlar, H. L., Winston-Salem; Med. Coll. of the State of S. C., 1915	1916	1916
Johnson, Wingate M., Winston-Salem; Jeff. Med. Coll., 1908	1908	1911
Jones, Beverly N., Winston-Salem; Med. Coll. of Va., 1915	1915	1921
Jones, R. Rives, Winston-Salem; Med. Coll. of Va., 1923	1923	1925
Kapp, Henry H., Winston-Salem; Jeff. Med. Coll., 1901	1901	1904
Keiger, O. R., Winston-Salem; Univ. Coll of Med., Richmond, 1911	1911	1914
Kerr, Jas. Edwin, Winston-Salem; Univ. of Md., 1897	1898	1898
Lasley, J. M., Winston-Salem; Univ. of Cinn., 1925	1925	1927
Lawrence, Chas. S., Winston-Salem; Univ. of Ga., 1908	1908	1911
Linville, Aaron Y., Winston-Salem (Hon.); Univ. of N. Y. 1889	1889	1896
Lockett, Everett A., Winston-Salem; Univ. of Pa., 1902	1904	1904
Long, Vann McKee, Winston-Salem; N. C. Med. Coll., 1906	1906	1911
Mimms, C. W., Winston-Salem; Univ. of Louisville, 1914	1916	1917
Moore, R. A., Winston-Salem; N. C. Med. Coll., 1911	1911	1917
Munt, H. F., Winston-Salem; Va. Med. Coll., 1911	1914	1916

Paddison, John Robt., Kernersville; Univ. of Md., 1902	1902	1913
Pepper, John Kerr, Winston-Salem; P. and S. Balt., 1907	1908	1908
Perkins, J. R., Winston-Salem; Va. Med. Coll., 1904	1910	1917
Pfohl, Samuel F., (Hon.) Winston-Salem; Univ. of Pa., 1894	1898	1898
Pool, B. B., Winston-Salem; Jeff. Med. Coll., 1923	1923	1925
Poole, C. G., Winston-Salem; Tulane, 1924	1924	1927
Rousseau, J. P., Winston-Salem; Univ. of Md., 1918	1920	1920
Salmons, L. R., Winston-Salem; N. C. Med. Coll., 1912	1912	1916
Schallert, P. O., Winston-Salem; Univ. of Ill., 1904	1911	1912
Schaub, O. P., Winston-Salem; Balt. Med. Coll., 1898	1898	1898
Simmons, R. R., Winston-Salem; Va. Med. Coll., 1917	1923	1924
Slate, John S., Winston-Salem; Univ. Coll. of Med., Va., 1900	1899	1920
Smith, R. E., Winston-Salem; Univ. of Pa., 1923	1923	1926
Spainhour, Ellis H., (Hon.) Winston-Salem; Balt. Med. Coll., 1898	1898	1898
Speas, D. C., Winston-Salem, R. F. D.; Univ. of Md., 1911	1913	1924
Spencer, Wm. O., Winston-Salem (Hon.); Jeff. Med. Coll., 1891	1891	1894
Spicer, R. W., Winston-Salem; N. C. Med. Coll., 1910; Univ. of Pa., 1911	1910	1916
Sprunt, W. H., Jr., Winston-Salem; Univ. of Pa., 1918	1918	1925
Street, C. A., Winston-Salem; Harvard Med. School, 1918	1918	1925
Strickland, Edward F., Winston-Salem (Hon.); Univ. of New York, 1887	1887	1893
Summers, Chas. L., Baltimore, Md., (Hon.); Univ. and P. and S., Md., 1887	1892	1896
Thompson, Edg. S., Winston-Salem; Univ. of N. Y., 1919	1919	1921
Tuttle, Reuben G., Winston-Salem; N. C. Med. Coll., 1909	1909	1913
Valk, A. deT., Winston-Salem; Johns Hopkins, 1910	1913	1914
White, C. S., Winston-Salem; Med. Coll. Va., 1925	1925	1927
Whittington, Jas. B., Winston-Salem; N. C. Med. Coll., 1911	1911	1913
Wyatt, Wortham, Winston-Salem; Univ. of Pa., 1913	1913	1916

FRANKLIN COUNTY SOCIETY

President: R. B. Henderson, Franklinton; Univ. of Md., 1884	1884	1904
Secretary: Harry H. Johnson, Louisburg; Coll. of P. and S., Balt., 1915	1919	1919
Burt, S. P., Louisburg; P. and S., Balt., 1896	1896	1904
Johnson, B. C., Bunn; Univ. of N. C., 1909	1909	1910
Newell, J. O., Louisburg; P. and S., Balt., 1910	1910	1912
Perry, A. H., Wood; Univ. of Md. and P. and S., Balt., 1924	1924	1925
Perry, H. G., Louisburg; P. and S., Balt., 1915	1915	1916
Timberlake, C. V., Youngsville; Jefferson Med. Coll., 1915	1915	1922
Timberlake, Richard E., Youngsville; Jefferson, 1908	1908	1910
Winston, A. R., Franklinton; Bellevue Med. Coll., 1899	1899	1900
Yarborough, R. F., Louisburg; Geo. Wash. Univ., 1898	1899	1899

GASTON COUNTY SOCIETY

President: J. M. Pressly, Belmont; N. C. Med. Coll., 1915	1915	1920
Secretary: James A. Anderson, Gastonia; Univ. of Ga., 1904	1909	1909

Adams, Charles E., Gastonia; Univ. of Md., 1897	1885	1904
Anders, McT. G., Gastonia; Md. Med. Coll., 1901	1902	1902
Anthony, J. E., Kings Mountain; Univ. of Tenn., 1911	1911	1911
Belk, Geo. W., Gastonia; Atlanta School of Med., 1913	1918	1924
Blair, J. L., Gastonia; Atlanta Med., 1915	1920	1921
Boyles, M. F., Dallas; N. C. Med. Coll., 1917	1917	1920
Campbell, J. W., Gastonia; P. and S., Balt., 1893	1919	1920
Clinton, Roland S., Gastonia; Univ. of Md., 1914	1914	1920
Eddleman, Hall M., Gastonia; Coll. of Phys. and Surgs., Balt., 1886	1889*	1904
Garrison, D. A., Gastonia; Louisville Med. Coll., 1896	1896	1900
Glenn, Henry F., Gastonia; P. and S., Atlanta, 1900	1900	1904
Glenn, Lucius N., Gastonia; Univ. of Md., 1897	1897	1904
Groves, R. B., Lowell; Med. Coll. of Va., 1924	1924	1924
Hood, J. Sidney, Gastonia; Jeff. Med. Coll., 1907	1907	1910
Hord, J. G., Kings Mountain; Univ. Nashville, 1886	1891	1926
Houser, W. H., Cherryville; N. C. Med. Coll., 1900	1900	1904
Hunter, W. B., Cramerton; Univ. of Pa., 1911	1911	1920
Johnson, R. Lee, Gastonia; Jefferson, 1911	1911	1918
Lowry, S. A., Kings Mountain; Memphis Hosp., 1900	1926	1927
Lyday, C. E., Gastonia; Atlanta S. of Med., 1910	1910	1920
McAdams, C. R., Belmont; N. C. Med. Coll., 1912	1912	1916
McChesney, W. W., Gastonia; Med. Coll. Va., 1915	1925	1927
McCombs, C. J., Gastonia; N. C. Med. Coll., 1905	1905	1908
Miller, Oscar L., Gastonia; Atlanta Coll. of P. and S., 1912	1921	1922
Miller, R. C., Gastonia; N. C. Med. Coll., 1909	1918	1919
Moore, D. B., Mt. Holly; Med. Coll. of Va., 1915	1915	1921
Parks, W. B., Gastonia; Univ. of Md., 1924	1924	1927
Patrick, Geo. R., Jr., Bessemer City; Univ. of Md., 1916	1916	1920
Patrick, L. N., Gastonia; Univ. of Md., 1909	1910	1913
Pugh, Charles H., Gastonia; N. C. Med. Coll., 1910	1910	1913
Quickel, Thomas C., Gastonia; Tulane Univ. 1900	1899	1904
Reid, James W., Lowell; Jefferson, 1908	1908	1910
Rhyne, Robert Edgar, Gastonia; N. C. Med. Coll., 1907	1907	1908
Scruggs, W. H., Gastonia; Univ. of Md., 1913	1915	1917
Stokes, P. B., Kings Mountain; Univ. of N. C., 1914; Med. Coll. Va., 1917	1917	1926
Swann, Jos. F., Gastonia; P. and S., Balt., 1896	1896	1905
Wilkins, Samuel A., Dallas; Univ. of Ky., 1902	1903	1903

GATES COUNTY SOCIETY

President:	-------	-------
Secretary:	-------	-------

GRANVILLE COUNTY SOCIETY

President: Wm. L. Taylor, Oxford; Univ. of Va., 1900	1901	1901
Secretary: Joseph A. Morris, Oxford; Vanderbilt Univ., 1890	1893	1899
Bullock, W. B., Oxford; Bellevue Med. Coll., 1892	1892	1893

*Registered.

Cannady, Sam H., Oxford; Univ. of Va., 1887	1889	1904
Daniel, N. C., Oxford; N. C. Med. Coll., 1895	1895	1902
Hardee, Parrott R., Stem; P. and S., Balt., 1885	1885	1906
Hays, B. K., Oxford (Hon.); Univ. Coll. of Med., Va., 1894	1894	1897
Noblin, Roy L., Stovall; Med. Coll. of Va., 1924	1924	1924
Sikes, G. T., Creedmoor (Hon.); Univ. of Md., 1883	1884	1884
Thomas, Wm. N., Oxford; Va. Med. Coll., 1911	1911	1914
Thompson, Joseph W., Creedmoor; Univ. of Ky., 1904	1907	1912
Watkins, Geo. S., Oxford; Univ. Coll. of Med., 1900	1900	1908

GREENE COUNTY SOCIETY

President: Wm. W. Whittington, Snow Hill; Louisville Med. Coll., 1895	1895	1902
Secretary: W. E. Dawson, Hookerton; Jefferson, 1920	1920	1922
Carroll, F. W., Hookerton; Med. Coll. Va., 1925	1926	1927
Edwards, G. C., Hookerton (Hon.); Bellevue Med. Coll., 1883	1883	1883
Harper, J. H., Snow Hill; Jefferson, 1905	1906	1907
Murphy, W. B., Snow Hill; Univ. Coll. of Med., Va., 1903	1903	1905

GUILFORD COUNTY SOCIETY

President: Harry L. Brockmann, High Point; Univ. of Pa., 1917	1917	1921
Secretary: Walter L. Jackson, High Point; N. C. Med. Coll., 1911	1911	1913
Ashworth, W. C., Greensboro; P. and S., Balt., 1892	1892	1904
Austin, J. W., High Point; Jeff. Med. Coll., Phila., 1910	1910	1913
Aydlett, H. T., Greensboro; Univ. of Va., 1894	1895	1907
Banner, A. C., Greensboro; Jeff. Med. Coll., 1920	1920	1922
Banner, Chas. W., Greensboro; Univ. of Md., 1899	1899	1901
Battle, John T. J., Greensboro (Hon.); P. and S., Balt., 1884	1884	1890
Beall, Wm. P., Greensboro (Hon.); Jeff. Med. Coll., 1879	1879	1879
Berry, John, Greensboro; Jeff. Med. Coll., 1908	1908	1920
Best, Benj. W., Greensboro; Coll. of P. and S., Balt., 1884	1884	1920
Bonner, O. B., High Point; Univ. of Md., 1917	1920	1921
Bowman, H. P., Greensboro; Univ. of Tenn., 1894	1894	1905
Boyles, J. H., Greensboro; P. and S., Balt., 1903	1903	1904
Buie, R. M., Greensboro; Jeff. Med. Coll., 1914	1914	1920
Burress, D. A., High Point; Louisville Hosp. Med. Coll., 1908	1922	1924
Burrus, John T., (Hon.) High Point; Univ. of Md., 1900; Grant Univ. 1902	1898	1898
Cater, C. D., Greensboro; Emory Univ., 1920	1923	1924
Christian, Thos. D., Greensboro; Harvard Med. School, 1923	1926	1927
Coe, Samuel S., High Point; Univ. Coll. of Med., Va., 1911	1912	1913
Cole, Walter F., Greensboro; Johns Hopkins, 1909	1909	1910
Collings, Ruth M., Greensboro; Univ. of Pa., 1923	1926	1927
Cozart, S. R., Greensboro; Med. Coll. of Va., 1923	1923	1925
Crews, N. H., Greensboro; Jeff. Med. Coll., 1914	1914	1916
Davis, R. B. Greensboro; Med. Coll. of Va., Richmond, 1915	1916	1917

Davis, W. C., Summerfield; Univ. of Md., 1896	1899*	1904
Dees, Ralph Erastus, Greensboro; Univ. of Md., 1906	1908	1909
Dees, Ridgen O., Greensboro; Univ. of Md., 1906	1907	1908
Dick, Julius Vance, Gibsonville; Univ. of N. C., 1907	1907	1908
Dyer, John W., High Point; Univ. of Louisville, 1916	1921	1925
Edwards, V. E., Greensboro; Univ. of Md., 1913	1913	1913
Ferneyhough, W. L., Greensboro; W. of M., 1916	1926	1927
Flagge, Philip W., Jamestown; Wash. Univ., St. Louis, 1902	1905	1919
Fortune, Alex. F., Greensboro; Univ. Coll. of Med. Va., 1900	1900	1904
Fox, N. A., Guilford College; Univ. of Pa., 1924	1924	1926
Gaw, Lois B., Greensboro; Woman's Med. Coll., Balt., 1907	1907	1924
Gilmore, C. M., Greensboro; Med. Coll. of Va., 1925	1925	1926
Gove, Anna M., Greensboro (Hon.); Woman's Med. Coll. of New York Infirmary, 1892	1894	1896
Grayson, C. S., High Point; Geo. Wash. Univ., 1906	1907	1908
Griffin, T. A., Greensboro; Univ. of Md., 1912	1913	1923
Groome, J. G., High Point; Univ. of Ohio, 1924	1924	1925
Harden, R. N., Greensboro; Univ. of Pa., 1922	1922	1924
Harrison, Edmund, Greensboro; Univ. Coll. of Med., 1896	1900	1900
Harvey, W. W., Greensboro; Emory Univ., 1920	1922	1923
Herring, R. A., Greensboro; Tulane, 1905	1923	1924
Hiatt, H. B., High Point; Univ. of Md., 1907	1907	1910
Holden, E. C., High Point; Long Island Coll. Hosp., 1911	1920	1924
Holt, D. W., Greensboro; Jeff. Med. Coll., 1918	1918	1920
Holt, Wm. T., McLeansville; Univ. of Tenn., 1890	.....	1896
Hudson, C. C., Greensboro; Univ. Coll. of Med. of Va., 1910	1918	1924
Jarboe, Parron, Greensboro; Georgetown Univ., 1905	1906	1907
Jennings, C. W., Greensboro; Med. Coll. of Va., 1916	1916	1926
Johnson, Harry L., Greensboro;	.....	1927
Jones, Athur O., Greensboro; Bellevue, 1890	1890	1904
Jones, Wm. M., Greensboro; Univ. of Md., 1903	1903	1903
Keiger, James A., Greensboro; Univ. of Va., 1916	1916	1919
Keith, Marion Y., Greensboro; Univ. of Md., 1923	1923	1927
Knight, Wm. P., (Hon.) Greensboro; Balt. Med. Coll., 1898	1898	1898
Lewis, S. V., Greensboro; Med. Coll. of Va., 1916	1916	1923
Long, E. F., High Point; Med. Coll. Va., 1909	1909	1912
Lyday, R. O., Greensboro; Univ. of Pa., 1920	1920	1927
Lyon, B. R., Greensboro; Columbia Univ., 1915	1920	1920
McAnally, Wm. J., High Point; Balt. Med. Coll., 1897	1896	1899
McCain, Wm. R., High Point; Univ. of Md., 1897	1898	1898
McManus, W. L., Greensboro; Atlanta School of Med., 1906	1912	1913
Mann, I. Thurman, High Point; Jeff. Med. Coll., 1912	1912	1915
Meadows, W. J., Greensboro; Med. Coll. of Ala., 1894	1899	1904
Micheaux, Edward R., Greensboro; Univ. of N. Y., 1889	1889	1904
Miles, May S., Greensboro; Laura Mem. Women's Coll. of Med., Cincinnati, Ohio, 1898	1904	1905
Moore, Wm. James, Asheboro; P. and S., Balt., 1893	1893	1901
Moseley, Charles W., (Hon.) Greensboro; Balt. Med. Coll., 1893	1893	1896
Ogburn, H. H., Greensboro; Johns Hopkins Univ., 1913	1913	1914

*Registered.

Ownbey, Arthur D., Greensboro; Med. Coll. Va., 1920	1925	1927
Parker, H. R., Greensboro; Univ. of Syracuse, 1923	1924	1925
Pate, F. J., Greensboro; Univ. of Md., and P. and S., Balt., 1908	1908	1915
Patman, W. L., Greensboro; Harvard Med. School, 1921	1926	1927
Post, J. J., Greensboro; Columbia Univ., 1919	1925	1926
Ravenel, S. F., Greensboro; Johns Hopkins, 1923	1923	1926
Reaves, C. R., Greensboro; Univ. of the South, 1906	1913	1913
Reaves, W. P., Greensboro; Univ. of the South, 1903	1905	1907
Reitzel, Claude E., High Point; P. and S., Atlanta, 1902	1902	1902
Rhudy, Booker E., Greensboro; Med. Coll. Va., 1916	1926	1927
Roberson, Charles, Greensboro; Long Island Coll. Hosp., 1897	1897	1901
Saunders, S. Stewart, High Point; Harvard Med. School, 1924	1926	1927
Schoonover, R. A., Greensboro; Baltimore Med. Coll., 1905	1912	1912
Scott, Thomas G., High Point; Univ. of Cinn., 1923	1926	1927
Scott, Wilhelmina S., Greensboro; Univ. of Pa., 1923	1926	1927
Sharpe, F. A., Greensboro; Univ. of Pa., 1916	1916	1920
Sharpe, O. L., Greensboro; Jeff. Med. Coll., 1922	1924	1925
Shohan, Joseph, Greensboro; Coll. P. and S., Balt., 1901	1914	1924
Shreve, J. R., Brown Summitt; N. C. Med. Coll., 1915	1915	1920
Simmons, L. L., Greensboro; Univ. Tenn., 1893; Vanderbilt Univ., 1899	1918	1919
Slate, J. W., High Point; Univ. Coll. of Med., Rich., 1900	1899	1925
Smith, Owen, High Point; Jeff. Med. Coll. of Phila., 1904	1905	1917
Spoon, A. O., Greensboro; Univ. of N. C., 1908	1908	1910
Spriull, Jos. L., Jamestown; Univ. of Md., 1895	1895	1907
Stanton, D. A., High Point (Hon.); Vanderbilt Univ., 1887	1887	1891
Stanton, T. M., High Point; Med. Coll. Va., 1916	1916	1917
Starr, H. F., Greensboro; Jeff. Med. Coll., 1916	1916	1917
Summers, Emmett A., Randleman; Baylor Univ. Texas, 1925	1926	1927
Tankersley, J. W., Greensboro; Jeff. Med. Coll., 1906	1906	1907
Taylor, F. R., High Point; Univ. of Pa., 1913	1913	1915
Taylor, Jas. N., Graham; Med. Coll. of Va., 1901	1902	1905
Taylor, S. R., Greensboro; Univ. of Pa., 1921	1921	1924
Taylor, Wesley, Greensboro; U. of Mich., 1899	1925	1926
Thomas, J. G., Greensboro; Med. Coll. of Va., 1915	1915	1920
Thompson, C. D., High Point; Univ. of Tenn., 1901	1901	1904
Turner, J. P., Greensboro; Univ. of Md., 1896	1897	1904
Walker, J. B., Gibsonville; Med. Coll. of Va., 1914	1914	1916
Whitaker, A. C., Julian; Univ. of Tenn., 1903	1903	1908
Wilkerson, C. E., Greensboro; Univ. of Nashville, Tenn., Med. Dept., 1907	1908	1909
Williams, B. B., Greensboro; Univ. of Md., 1883	1887	1893
Williams, John D., (Hon.) Guilford Station; Vanderbilt Univ., 1898	1898	1898
Wilson, Albert R., Greensboro (Hon.); Jefferson Med. Coll., 1882	1882	1882
Wilson, N. G., Greensboro; N. C. Med. Coll., 1914	1914	1914
Wolfe, H. C., Greensboro; Med. Coll. of Va., 1917	1917	1920
Wolff, D. R., Greensboro; Jeff. Med. Coll., 1918	1918	1920

Woodruff, Fred G., High Point; Med. Coll. of Va., 1917	1917	1919
Wyatt, H. L., Greensboro; Med. Coll. of Va., 1916	1924	1925
York, Alexander A., High Point; Chattanooga Med. Coll., 1907	1907	1909

HALIFAX COUNTY SOCIETY

President: O. F. Smith, Scotland Neck; Univ. Coll. of Med. Va., 1899	1899	1904
Secretary: Z. P. Mitchell, Weldon; Med. Coll. of Va., 1920	1920	1921
Beckwith, R. P., Roanoke Rapids; Univ. of Pa., 1911	1913	1916
Fleming, W. L., Enfield; Univ. of N. C., 1910	1910	1916
Lassiter, H. G., Weldon; Jeff. Med. Coll., 1918	1918	1920
Long, T. W. M., Roanoke Rapids; Univ. Coll. of Med. Va., 1908	1909	1910
Martin, J. W., Roanoke Rapids; Med. Coll. of Va., 1916	1919	1920
Nicholson, B. M., Enfield; Va. Univ. Coll. of Med., 1910	1910	1913
Palmer, Horace, Littleton; Atlanta School of Med., 1912	1912	1920
Suiter, W. G., Weldon; Med. Coll. of Va., 1917	1917	1920
Thigpen, H. G., Scotland Neck: Jeff. Med. Coll., 1917	1917	1920
Weathers, Bahnson, Roanoke Rapids; Wash. Univ. Med. School, St. Louis, 1917	1921	1922
Whitaker, F. C., Enfield; Maryland Med. Coll., 1911	1911	1919
Zollicoffer, D. B., Weldon; P. and S., Balt., 1881	1886	1904

HARNETT COUNTY SOCIETY

President: Wm. P. Holt, Erwin; Jeff Med. Coll., 1895	1895	1901
Secretary: S. A. Duncan, Coats; Tulane Univ. 1924	1924	1926
Barefoot, M. L., Dunn, R. F. D. No. 6; Univ. of Md., 1911	1911	1912
Coltrane, Wallace E., Dunn; Med. Coll. Va., 1912	1913	1917
Halford, Jos. W., Lillington; Geo. Wash. Univ., 1904	1905	1905
Hicks, Isham Faison, Dunn; N. C. Med. Coll., 1902	1902	1904
Holt, Wm. P., Jr., Erwin; Jeff. Med. Coll., 1926	1926	1927
McKay, Joseph F., Buies Creek; S. C. Med. Coll., 1884	1885	1904
McLean, John W., Godwin; N. C. Med. Coll., 1902	1902	1906
Martin, J. F., Dunn; N. C. Med. Coll., 1905	1905	1918
Melvin, Wayman C., Linden; Univ. Coll. of Med., Rchmond 1900	1900	1905
Parker, Paul G., Erwin; Med. Coll. of Va., Richmond, 1916	1916	1917
Sexton, C. Hector, Dunn; Univ. of Md., 1880	1890	1904
Warren, R. L., Dunn; Tulane Univ., 1911	1911	1912
Wyatt, A. T., Lillington; Jeff. Med. Coll., 1919	1919	1927
Young, C. R., Angier;	.....	1927

HAYWOOD COUNTY SOCIETY

President: J. R. McCracken, Waynesville; N. C. Med. Coll., 1902	1902	1903
Secretary: Jas. L. Stringfellow, Waynesville; Univ. of Va., 1915	1921	1922
Abel, J. F., Waynesville; Univ. of Balt., 1892	1892	1899
Allen, Rufus L., Waynesville; Univ. of Md., 1885	1885	1889
Davis, F. M., Canton; Vanderbilt Univ., 1894	1894	1904
Francis, Wm. G., Waynesville; Jeff. Med. Coll., 1915	1916	1925

Johnson, W. C., Canton; Tulane Univ. of La., 1912	1912	1917
Kirkpatrick, W. L., Waynesville; Vanderbilt Univ., 1894	1894	1905
Reynolds, T. F., Canton; N. C. Med. Coll., 1904	1904	1920
Russell, Jesse M., Canton; Univ. of Nashville, 1911	1911	1912
Stringfield, Samuel L., Waynesville; Jeff. Med. Coll., 1905	1905	1907
Stringfield, Thomas, Waynesville; Vanderbilt Univ., 1898	1898	1899
Way, J. Howell, Waynesville (Hon.); Vanderbilt Univ., 1886	1885	1887

HENDERSON COUNTY SOCIETY

President: J. L. Weddington, Hendersonville; Sou. Med. Coll., Atlanta, 1898	1925	1926
Secretary: W. O. Allen, Hendersonville; Med. Coll. of S. C., 1925	1926	1926
Brackett, W. E., Hendersonville; Jeff. Med. Coll., 1915	1915	1924
Brown, J. S., Hendersonville (Hon.); Northwestern Univ., 1893	1894	1895
Brown, J. S., Jr., Hendersonville; Tulane, 1925	1926	1926
Cliff, B. F., Hendersonville; Geo. Washington Univ., 1908	1909	1915
Dixon, Guy E., Hendersonville; P. and S., St. Louis, 1903	1903	1903
Drafts, Andrew B., Hendersonville; Univ. of Va., 1896	1899	1903
Edgerton, Jas. L., Hendersonville (Hon.); Univ. of Md., 1877	1889*	1890
Greenwood, S. E., Fletcher; Tenn. Med. Coll., 1902	1903	1904
Howe, Wm. B. White, Jr., Hendersonville; Med. Coll. of S. C., 1906	1907	1908
Kirk, W. R., Hendersonville; Central Univ., Louisville, 1891	1901	1903
Mallet, E. P., Hendersonville; L. I. Coll. Hosp., Brooklyn, 1889	1914	1914
Patton, A. B., Hendersonville; Northwestern Univ., 1911	1925	1926
Payne, J. W., E. Flat Rock; Med. Coll. Maryland, 1903	1924	1926
Russell, Lloyd P., Fletcher; Univ. of Nashville, 1901	1902	1903
Sample, R. C., Hendersonville; Univ. of Pa., 1915	1915	1919
Sumner, Thos. W., Fletcher; Jeff. Med. Coll., 1910	1910	1911
Woodcock, J. H., Hendersonville;	.....	1927

HERTFORD COUNTY SOCIETY

President: W. B. Pollard, Winton; Univ. of Pa., 1899	1903	1905
Secretary: Paul H. Mitchell, Ahoskie; Univ. Coll. of Med., Richmond, 1907	1907	1908
Futrell, L. M., Murfreesboro; Va. Med. Coll., 1914	1914	1918
Gary, R. H., Murfreesboro; Coll. of Phys. and Surg., Balt., 1881	1889*	1904
Harrell, Geo. N., Murfreesboro; Univ. Coll. of Med., Richmond, 1907	1907	1909
Mitchell, Jesse H., Ahoskie; Coll. of P. and S., Balt., 1879	1889*	1904
Walker, L. K., Ahoskie; Univ. of Md., 1911	1911	1917

HOKE COUNTY SOCIETY

President: R. L. Murray, Raeford; Univ. of Md., 1923	1923	1925
Secretary: J. H. Williams, Sanatorium; Jeff. Med. Coll., 1920	1920	1922
Bittinger, S. M., Sanatorium; Geo. Washington Univ., 1918	1924	1924
Brown, G. W., Raeford; Ky. School Med., Louisville, 1898	1900	1900

*Registered.

Byerly, Wesley Grimes, Sanatorium; Richmond Med., 1924	1924	1925
Geddie, K. B., Raeford; Jeff. Med. Coll., 1921	1921	1923
Lee, S. E., Sanatorium; Univ. of Md., 1911	1924	1924
McBrayer, L. B., Southern Pines; Louisville Med. Coll., 1899	1891	1899
McCain, P. P., Sanatorium; Univ. of Md. and Coll. P. and S., Balt., 1911	1914	1917
Yoder, Paul A., Sanatorium; Univ. of Pa., 1923	1923	1925

HYDE COUNTY SOCIETY

President:	-------	-------
Secretary:	-------	-------
Harris, Arthur Graham, Fairfield; Univ. of the South, 1905	1907	1908

IREDELL-ALEXANDER COUNTIES SOCIETY

President: A. B. Sloan, Mooresville; Med. Coll. of Va., 1924	1924	1926
Secretary: Roy C. Tatum, Statesville; Jeff. Med., 1919	1919	1920
Adams, M. R., Statesville (Hon.); Univ. of Md., 1878	1884	1884
Alexander, Jas. M., Statesville; Georgetown Univ., 1925	1926	1927
Anderson, Thos. Eli, Statesville (Hon.); Jeff. Med. Coll., 1878	1879	1879
Bell, A. E., Mooresville; Univ. of Md. and Coll. of P. and S,. 1897	1897	1904
Cloninger, L. V., Statesville	-------	1927
Crouch, T. D., Stony Point; N. C. Med. Coll., 1909, and Univ. of Md., 1910	1909	1915
Davis, Jas. W., Statesville; Univ. of Pa., 1913	1913	1915
Easley, P. S., Statesville; N. C. Med. Coll., 1907; Jeff. Med. Coll., Phila., 1908	1907	1913
Gilmore, W. D., Ft. Wayne, Ind.; Univ. of N. C., 1903	1903	1904
Goode, T. V., Statesville; Univ. Coll. of Med., Va., 1912	1912	1916
Hart, V. K., Statesville; Univ. of Pa., 1921	1924	1925
Herman, Chas. B., Statesville; Jeff. Med. Coll., 1923	1923	1925
Jurney, Peter Claywell, Turnersburg; Med. Coll. of Va., 1901	1901	1904
Lackey, M. A., Mooresville; N. C. Med. Coll., 1917	1923	1924
Leeper, Donald H., Hiddenite; N. C. Med. Coll., 1906	1906	1913
Little, E. E., Statesville; N. C. Med. Coll., 1912	1912	1915
Little, Lonnie M., Statesville; Jeff. Med. Coll., 1925	1925	1927
Long, H. F., Statesville (Hon.); Balt. Med. Coll., 1891	1892	1893
McElwee, Ross S., Statesville; Univ. of Md., 1909	1909	1910
McLaughlin, J. E. (Hon.) Statesville; Univ. of Md., 1886	1886	1896
McLelland, W. D., Mooresville; Jeff. Med. Coll., 1913	1913	1917
Nicholson, C. R., Statesville; N. C. Med. Coll., 1912	1912	1916
Poston, J. Lewis, Statesville; Jeff. Med. Coll., 1922	1923	1924
Rhyne, S. A., Statesville; N. C. Med. Coll., 1915	1915	1920
Sharpe, Frank L., Statesville; Univ. of N. C., 1904	1904	1905
Sherrill, C. L., Statesville; N. C. Med. Coll., 1914	1914	1915
Tally, J. S., Troutman; Univ. of N. C., 1909	1910	1917
Taylor, G. W., Mooresville; N. C. Med. Coll., 1906	1906	1917
Templeton, J. Y., Mooresville; Jeff. Med. Coll., 1912	1913	1927
Thurston, Asa, Taylorsville; Univ. of Md., 1909	1909	1914

Trivette, W. A., Hamptonville; Med. Coll. of Va., 1916	1916	1925
Wilson, W. E., Mooresville; Louisville Med. Coll., 1886	1886	1920

JACKSON COUNTY SOCIETY

President:	——	——
Secretary: Grover C. Wilkes, Sylva; N. C. Med. Coll., 1916	1916	1920
Candler, Chas. Z., Sylva; P. and S., Atlanta, 1901	1901	1904
Hooper, D. D., Sylva; Univ. Coll. of Med., Va., 1905	1905	1905
Nichols, Alvin A., Sylva; Univ. of Nashville Med. Dept., 1898	1904	1904
Nichols, Asbury S., Sylva; Tenn. Med. Coll., 1906	1907	1913
Van Epp, Owen B., Cashiers; Cleveland-Pulte Med. Coll., 1900	1923	1923

JOHNSTON COUNTY SOCIETY

President: Geo. D. Vick, Selma; Jeff. Med. Coll., 1906	1906	1907
Secretary: C. C. Massey, Smithfield; Jeff. Med. Coll., 1923	1923	1925
Aycock, F. M., Princeton; Med. Coll. of Va., 1921	1921	1926
Coleman, G. S., Kenly; Med. Coll. of Va., 1907	1907	1909
Fitzgerald, J. Herbert, Smithfield; Jeff. Med. Coll., 1920	1920	1922
Grady, Jas. C., Kenly (Hon.); Balt. Univ. School of Med., 1887	1887	1890
Hinnant, Milford, Micro; Univ. of Md., 1912	1912	1913
Hocutt, Battle A., Clayton; Univ. of N. C. School of Med., 1906	1906	1908
Hooks, Thel, Smithfield; Med. Coll. of Va., 1901	1901	1903
McLemore, George A., Smithfield; Univ. of N. C., 1906	1906	1908
Mayerberg, I. W., Selma; Jeff. Med. Coll., 1907	1907	1909
Noble, R. J., Selma (Hon.); Ky. Med. School, 1875	1878	1878
Oliver, A. S., Benson; Jeff. Med. Coll., 1914	1914	1919
Orr, W. J. B., Smithfield; Univ. of Md., 1920	1920	1922
Parker, G. E., Benson; Coll. of P. and S., Balt., 1886	1889*	1904
Person, J. B., Selma; Med. Coll. of Va., 1897	1897	1900
Rose, A. H., Smithfield; Jeff. Med. Coll., 1906	1906	1907
Stanley, John H., Four Oaks; Univ. of N. C., 1904	1904	1906
Stevens, R. S., Princeton; Univ. of N. C., 1905	1905	1907
Surles, J. B., Four Oaks; Jeff. Med. Coll., 1909	1909	1919
Utley, H. H., Benson; Balt. Med. Coll., 1906	1906	1910
Wharton, L. D., Smithfield (Hon.); Tulane Univ., 1893	1893	1894
Wilson, W. G., Smithfield; Jeff. Med. Coll., 1921	1921	1924
Young, J. J., Clayton; P. and S., Balt., 1897	1896	1904

JONES COUNTY SOCIETY

President: A. F. Hammond, Pollocksville; Univ. Coll. of Med. Va., 1903	1903	1914
Secretary: B. W. Page, Maysville; Tulane Univ., 1909	1909	1919
Bell, J. C., Maysville; P. and S., Balt., 1910	1915	1922

LEE COUNTY SOCIETY

President: M. L. Mathews, Sanford; Univ. of N. C., 1903	1903	1904
Secretary: Lynn McIver, Sanford; Kentucky Univ., 1901	1902	1902
Bennett, W. H., Sanford; Loyola Univ., 1918	1920	1922
Foster, J. F., Sanford; N. C. Med. Coll., 1916	1916	1919
Knight, Floyd L., Sanford; Univ. of Va., 1924	1925	1926

Lutterloh, I. H., Sanford; Vanderbilt Univ., 1890	1894*	1922
Lutterloh, I. Hayden, Jr., Sanford; Jeff. Med. Coll., 1921	1921	1922
Monroe, J. P., Sanford; P. and S., Balt., 1901	1901	1905
Scott, Charles L., Sanford; Univ. of Md., 1897	1899	1916
Snipes, E. P., Jonesboro (Hon.); Vanderbilt Univ., 1890	1889*	1890
Sowers, Roy G., Jonesboro; Univ. of Md., 1923	1923	1924
Stockton, W. I., Carthage, R. F. D.; P. and S., Univ. of Md., 1915	1915	1925
Watson, Leon, Broadway; N. C. Med. Coll., 1900	1900	1904

LENOIR COUNTY SOCIETY

President: James M. Parrott, Kinston (Hon.); Tulane Univ., 1895	1895	1896
Secretary: Thos. L. Lee, Kinston; Med. Coll. Va., 1926	1926	1927
Bigler, V. L., Kinston; Univ. of Pittsburgh, 1925	1926	1927
Carr, M. L., La Grange; Med. Coll. Va., 1916	1916	1920
Dixon, Wm. H., Kinston; Med. Coll. of Va., 1901	1901	1901
Hardy, Ira M., Kinston; Med. Coll. of Va., 1901	1902	1902
Hyatt, A. L., Kinston; Univ. of Md., 1910	1910	1921
Lee, Mike, Kinston; Tulane Univ., 1926	1926	1927
McCuiston, A. M., Kinston; N. C. Med. Coll., 1911	1911	1917
McGeachy, R. S., Kinston (Hon.); Bellevue Hosp., 1894	1894	1895
Mangum, C. P., Kinston; Jeff. Med. Coll., 1918	1918	1920
Parrott, Albert DeK., Kinston; Univ. Coll. of Med., Va., 1906	1906	1908
Parrott, M. C., Kinston; Tulane Univ., 1917	1917	1919
Parrott, Wm. T., Kinston; Tulane Univ., 1899	1899	1901
Peery, Vance P., Kinston; Med. Coll. of Va., 1916	1917	1917
Sabiston, Frank, Kinston; Univ. of Md., 1918	1919	1926
Waterhouse, R. G., Kinston; Univ. of Va., 1922		1927
West, B. C., Kinston; Univ. of Pa., 1924	1924	1926
West, C. F., Kinston; Univ. of Pa., 1917	1917	1920
Weyher, V. E., Kinston; Univ. Vienna, Austria, 1869	1889*	1919
Whitaker, Frederick A., Kinston; Univ. of Pa., 1875	1889*	1884
Whitaker, Frederick S., Kinston; Balt. Med. Coll., 1913	1913	1914
Whitaker, Paul F., Kinston; Med. Coll. of Va., 1922	1922	1924
Wooten, Floyd P., Kinston; Jeff. Med., 1920	1920	1923

LINCOLN COUNTY SOCIETY

President: W. G. Bandy, Lincolnton; Vanderbilt Univ., 1908	1912	1916
Secretary: Thos. B. Mitchell, Lincolnton; Univ. of Pa., 1924	1925	1927
Costner, W. V., Lincolnton; Jeff. Med. Coll., 1924	1925	1927
Crowell, L. A., (Hon.); Lincolnton; Balt. Med. Coll., 1892	1892	1898
Edwards, F. D., Toluca; Atlanta Med., 1914	1916	1919
Elliott, W. F., Lincolnton; Pa. Medico-Chir. Coll., 1916	1916	1917
Gamble, J. F., Lincolnton; Univ. of Tenn., 1903	1915	1919
Gamble, J. R., Lincolnton; Univ. of Tenn., 1911	1911	1912
Hoover, C. H., Crouse; Chattanooga Med. Coll., 1900; Balt. Med. Coll., 1903	1903	1903
Jacocks, W. P., New York City; Univ. of Pa., 1911	1911	1913

*Registered.

Lee, R. E., Lincolnton; Univ. of Md., 1896	1896	1918
Shellum, O. W., Denver; N. C. Med. Coll., 1909	1909	1913

McDOWELL COUNTY SOCIETY

President: D. M. McIntosh, Old Fort; Med. Coll. of Va., 1904	1907	1909
Secretary: Guy S. Kirby, Marion; Univ. Coll. of Va., 1897	1896	1903
Ashworth, B. L., Marion; P. and S., Balt., 1892	1893	1900
Butt, R. B., Marion; Emory Univ., Atlanta, 1920	1920	1921
Johnson, John B., Old Fort; Univ. Louisville Med. Dept., 1905	1914	1914
Jonas, John F., Marion; Balt. Med. Coll., 1903	1903	1903
Justice, Gaston B., Marion; P. and S., Atlanta, 1907	1907	1907
Miller, J. F., Marion; Med. Chi. Phila., 1906	1915	1919

MACON-CLAY COUNTIES SOCIETY

President: S. H. Lyle, Franklin; Univ. of Nashville, 1883	1881	1882
Secretary: W. A. Rogers, Franklin; Univ. of Nashville, 1898	1898	1898
Angel, F., Franklin; Jeff. Med. Coll., 1918	1923	1924
Fouts, J. H., Franklin; Vanderbilt Univ., 1895	1895	1918
Horsley, H. T., Franklin; Balt. Med. Coll., 1907	1915	1918
Kilian, P. B., Hayesville; Atlanta Coll. of P. and S., 1900	1909	1909
Newman, L. B., Franklin; Univ. of Tenn., 1923	1926	1927
Williams, N. G., Franklin; Emory University, 1917	1924	1926

MADISON COUNTY SOCIETY

President: Frank Roberts, Marshall; Jeff. Med. Coll., 1892	1892	1902
Secretary:		
Locke, Eva M., White Rock; Univ. of Mich., 1900	1921	1922
Packard, G. H., Meredith, N. H., Rt. 1; P. and S., Balt., 1898	1914	1915
Peck, Edward J., Hot Springs; Vanderbilt Univ., 1879; Univ. of Nashville, 1880	1893*	1903
Robinson, Willard F., Mars Hill; Vanderbilt Univ., 1896	1903	1904
Tilson, Jacob Carson, Marshall; Lincoln Mem. Univ., 1892	1885	1904

MARTIN COUNTY SOCIETY

President: Edgar M. Long, Hamilton; Univ. of Md., 1909	1909	1910
Secretary: Wm. E. Warren, Williamston, Nongrad., Univ. N. Y.	1893	1894
Nelson, Robert J., Robersonville (Hon.); Louisville Med. Coll., 1890	1890	1893
Pittman, E. E., Oak City; Med. Coll. of Va., 1919	1919	1920
Rhodes, James S., Williamston; Med. Coll. of Va., 1906	1906	1907
Saunders, Jos. H., Williamston; Univ. Coll. of Med., Va., 1905	1905	1909
Smithwick, James E., Jamesville; Univ. Coll. of Med., 1897	1897	1904
Ward, Jesse E., Robersonville; Univ. of Md., 1904	1904	1905
Ward, Vernon Albert, Robersonville; Jeff. Med. Coll., 1908	1908	1914
York, Hugh B., Williamston; P. and S., Balt., 1906	1906	1907

*Registered.

MECKLENBURG COUNTY SOCIETY

President: John P. Kennedy, Charlotte; Jeff. Med. Coll., 1915	1915	1920
Secretary: Thomas P. White, Charlotte; Univ. of Pa., 1922	1924	1925
Abernathy, H. N., Charlotte; Louisville Med. Coll., 1894	1894	1899
Alexander, Annie L., Charlotte (Hon.); Women's Med. Coll., Pa., 1884	1885	1885
Alexander, M. Janet, Montgomery, India; Women's Med. Coll., Pa., 1917	1917	1918
Alexander, Jas. R., Univ. of Md., 1894	1894	1899
Allan, William, Charlotte; P. and S., Balt., 1906	1906	1914
Ashe, J. R., Charlotte; Columbia Univ., 1911	1915	1915
Barret, H. P., Charlotte; Univ. of Louisville, 1908	1917	1919
Barron, A. A., Charlotte; Vanderbilt Univ., 1909	1910	1910
Biggart, William P., Charlotte; Med. Coll. of State of S. C., 1925	1925	1926
Black, Geo. Wm., Pineville; Med. Coll. of Va., 1924	1924	1925
Blair, Andrew, Charlotte; Univ. of Pa., 1924	1925	1926
Blalock, B. K., Charlotte; Univ. of Md., 1913	1913	1917
Bost, T. C., Charlotte; Geo. Washington Univ., 1915	1920	1921
Boyette, E. C., Charlotte; Balt. Med. Coll., 1893	1898	1906
Brenizer, A. G., Jr., Charlotte; Johns Hopkins, 1908, and Univ. of Heidelberg	1911	1911
Britt, C. S., Charlotte; Emory Univ., 1920	1925	1926
Caldwell, J. H., Charlotte; N. C. Med. Coll., 1914	1914	1914
Craven, Thomas, Huntersville; Jeff. Med. Coll., 1917	1917	1918
Craven, W. W., Charlotte; Univ. of Md., 1903	1904	1904
Crowell, Andrew J., Charlotte (Hon.); Univ. of Md., 1893	1892	1894
Crowell, L. A., Lincolnton; Balt. Med. Coll., 1892	1892	1898
Davidson, John E. S., (Hon.) Charlotte; Univ. of Md., 1894	1898	1898
De Armon, J. McC., Charlotte (Hon.); Univ. of Md., 1886	1886	1887
Elliott, J. A., Charlotte; Univ. of Mich., 1914	1919	1920
Faison, Yates W., Charlotte; Harvard Univ., 1910	1910	1912
Ferguson, R. T., Charlotte; Va. Univ. Coll. of Med., 1906	1909	1909
Gage, L. G., Charlotte; Univ. of Va., 1915	1921	1922
Gallant, Robert M., Charlotte; N. C. Med. Coll., 1915	1915	1916
Gaul, John Stuart, Charlotte; Medico-Chir., Phila., 1913	1922	1923
Gibbon, James, Charlotte; Jeff. Med. Coll., 1918	1920	1921
Gibbon, Robert L., Charlotte (Hon.); Jeff. Med. Coll., 1887	1887	1888
Graham, Wm. A., Charlotte (Hon.); Columbia Univ., P. and S., N. Y., 1888	1889	1890
Hand, Edgar H., Charlotte; N. C. Med. Coll., Charlotte, 1907	1907	1913
Henderson, S. McD., Charlotte; Univ. of Md., 1894	1894	1904
Hipp, Edw. R., Charlotte; Univ. of Va., 1918	1920	1921
Holton, Thos. J., Charlotte; Emory Univ., 1909	1925	1926
Hovis, L. W., Charlotte; N. C. Med. Coll., 1904	1904	1906
Hunter, L. W., Charlotte, Rt. 1 (Hon.); Bellevue Hosp., 1875	1880	1880
Hunter, Myers, Charlotte, Georgetown Univ., 1905	1906	1908
Irwin, Hammer C., Pocatella, Idaho; Univ. of Md., 1905	1908	1916
Irwin, J. R., Charlotte (Hon.); Univ. of Md., 1879	1882	1882
Johnston, J. G., Charlotte; Med. Dept. Vanderbilt Univ., 1899	1913	1916

Kelly, Luther W., Charlotte; Univ. of Va., 1924	1926	1927
King, Parks M., Charlotte; Bellevue Med. Coll., 1902	1902	1904
Lafferty, Robert H., Charlotte; N. C. Med. Coll., 1906	1906	1908
Leinbach, Robt. F., Charlotte; Univ. of Pa., 1907	1907	1910
Lubchenko, N. E., Harrisburg; N. C. Med. Coll., 1915	1915	1916
MacConnell, John W., Davidson; Univ. of Md., 1907	1908	1909
McFadden, R. H., Charlotte; S. C. Med. Coll., 1912	1927	1927
McKay, Hamilton W., Charlotte; N. C. Med. Coll., 1909; Jeff. Med. Coll., 1910	1911	1913
McLaughlin, Calvin S., Charlotte; Univ. of Md., 1896	1896	1903
McPhail, L. D., Charlotte; Univ. of Md., 1900	1900	1902
McPhaul, W. A., Charlotte; Univ. of Nashville, 1904	1905	1907
Martin, Wm. F., Charlotte; Univ. of Md., 1920	1920	1923
Martin, W. J., Davidson; Univ. of Va., 1890	1891	1919
Matheson, James P., Charlotte; Univ. of Md., 1905	1902	1907
Mathews, Vann M., Charlotte; Univ. of Pa., 1918	1918	1921
Miller, Oscar L., Gastonia; Atlanta Coll. P. and S., 1912	1921	1922
Misenheimer, Charles A., Charlotte (Hon.); N. Y. Univ. Med. Coll., 1882	1882	1882
Misenheimer, Thos. M., Charlotte; S. C. Med. Coll., 1925	1925	1927
Montgomery, John C., Charlotte (Hon.); N. Y. Univ. Med. Coll., 1891	1891	1895
Moore, Alexander W., Charlotte; Univ. of Va., 1901; Univ. and Bellevue Hosp. Med. Coll., 1902	1912	1913
Moore, Oren, Charlotte; N. C. Med. Coll., 1911	1911	1912
Moore, R. A., Charlotte; Univ. of Pa., 1923	1924	1925
Motley, Fred Elliot, Charlotte; Univ. of Mich., 1922	1926	1927
Munroe, H. Stokes, Charlotte; N. C. Med. Coll., 1902; Jeff. Med., 1903	1902	1904
Munroe, J. P., Charlotte (Hon.); Univ. of Va., 1885	1886	1890
Myers, Alonzo, Charlotte; N. C. Med. Coll., 1911; Bellevue Hosp. Med. Coll., 1916	1911	1920
Myers, John Q., Charlotte; N. C. Med. Coll., 1904	1904	1904
Nalle, B. C., Charlotte; Univ. of Va., 1903	1905	1905
Nance, C. L., Charlotte; N. C. Med. Coll., 1919	1921	1922
Newell, Leone B., Charlotte; Univ. of N. C., 1905	1905	1908
Newton, Howard L., Charlotte; Northwestern Univ., 1921	1923	1924
Nisbet, Walter O., Charlotte; Med. Coll. of S. C., 1889	1889	1889
Nisbet, Yates H., Charlotte	.....	1927
Northington, J. M., Charlotte; Med. Coll. of Va., 1905	1909	1909
Patterson, Reid, Charlotte; N. C. Med. Coll., 1912	1912	1913
Peeler, Clarence N., Charlotte; N. C. Med. Coll., 1906	1906	1908
Petteway, George H., Charlotte; N. C. Med. Coll., 1913	1913	1914
Phillips, C. C., Charlotte; N. C. Med. Coll., 1912	1912	1917
Pressly, Geo. W., Charlotte (Hon.); Jeff. Med. Coll., 1892	1895	1896
Query, Richard Z., Charlotte, Route 3; Univ. Coll of Med. Richmond, 1907	1907	1908
Rankin, Watson S., Charlotte; Univ. of Md., 1901	1901	1901
Ranson, J. Lester, Charlotte; N. C. Med. Coll., 1911	1911	1912
Ray, F. L., Charlotte; Univ. of Va., 1919	1919	1922

Ross, Otho B., Charlotte; Univ. Pa., 1909	1909	1912
Scruggs, W. Marvin, Charlotte; Univ. of Pa., 1914	1914	1920
Shirley, H. C., Charlotte; Johns Hopkins, 1918	1921	1922
Shull, J. Rush, Charlotte; Univ. of Pa., 1910	1910	1913
Sloan, H. L., Charlotte; Univ. of Pa., 1911	1913	1914
Sparrow, Thos. De L., Charlotte; Univ. of Pa., 1920	1920	1923
Squires, Claude B., Charlotte; Jeff. Med. Coll., 1919	1919	1921
Strong, Charles M., (Hon.) Charlotte; Univ. of Md., 1889	1889	1898
Strong, Wm. M., Charlotte; N. C. Med. Coll., 1904	1904	1905
Taylor, H. C., Charlotte, Chadwick Sta.; Tenn. Med., 1886	1910*	1915
Thompson, S. R., Charlotte; N. C. Med. Coll., 1914	1914	1915
Tilly, John Hill, Charlotte; Vanderbilt Univ., 1925	1926	1927
Todd, L. C., Charlotte; Univ. of Mich., 1918	1920	1920
Tucker, John H., Charlotte; Univ. of Va., 1899	1901	1911
Tydeman, F. W. L., Wood River, Ill.; N. C. Med. Coll., 1912	1912	1918
Wakefield, Harry A., Charlotte; N. C. Med. Coll., 1908	1908	1911
Wannamaker, Edward J., Jr., Charlotte; Wofford, 1917; Univ. of Pa., 1921	1924	1924
Whisnant, Albert M., Charlotte; P. and S., Balt., 1893	1893	1899
Wingate, G. C., Charlotte; N. C. Med. Coll., 1914	1915	1919
Wishart, Wm. E., Charlotte; N. C. Med. Coll., 1911	1911	1911
Witherspoon, B. J., Charlotte; S. C. Med. Coll., 1894	1900	1911
Woodruff, Julian S., Charlotte; Univ. of Md., 1920	1920	1923

MITCHELL-WATAUGA COUNTIES SOCIETY

President:	------	------
Secretary:	------	------
Butt, Virgil R., Bakersville; Jeff. Med. Coll., 1886	1889*	1907
Gouge, A. E., Bakersville; Med. Coll. of Va., 1917	1917	1920
Hodges, J. M., Boone; Balt. Med. Coll., 1904	1906	1914
Lambert, C. F., Spruce Pine; Jeff. Med. Coll., 1921	1921	1923
Perry, H. B., Valle Crusis; N. C. Med. Coll., 1905	1905	1922
Peterson, C. A., Spruce Pine; N. C. Med. Coll., 1907	1907	1908
Peterson, J. M., Spruce Pine; Tenn. Med. Coll., 1902	1918	1921

MONTGOMERY COUNTY SOCIETY

President: N. G. Nicholson, Jr., Mt. Gilead; N. C. Med. Coll., 1917	1917	1920
Secretary: W. F. Harris, Troy; Med. Coll. of 1925	1926	1927
Boyles, A. C., Troy; Univ. of Md., 1887; Balt. Univ. School Med., 1898	1889*	1912
Daligny, Charles, Troy (Hon.); Univ. of Paris, 1878	1889	1891
Dameron, Ernest L., Star; N. C. Med. Coll., 1911	1911	1913
Ingram, Charles B., Mt. Gilead (Hon.); Jeff. Med. Coll., 1886	1886	1892
McMillan, J. M., Candor; P. and S., Atlanta, 1909	1909	1911
Rankin, Pressly R., Mt. Gilead; N. C., Med. Coll., 1910	1910	1912
Shamburger, John B., Star (Hon.); Univ. of Md., 1890	1890	1892
Thompson, Alexander Frank, Troy; Med. Coll. of Indiana, 1895	1895	1904

*Registered.

MOORE COUNTY SOCIETY

President: Augustus A. McDonald, Jackson Springs; N. C. Med. Coll., 1905	1907	1912
Secretary: R. G. Rosser, Vass; N. C. Med. Coll., 1909	1909	1917
Blair, A. McNiel, Southern Pines; Niagara Univ., 1897	1904	1906
Blue, A. McN., Carthage; Tulane Univ., 1915	1916	1917
Blue, Waylon, Jackson Springs; Med. Coll. of Va., 1925	1925	1926
Bowman, H. E., Aberdeen; N. C. Med. Coll., 1904	1904	1919
Dickie, J. W., Southern Pines; Jeff. Med. Coll., 1918	1920	1921
Grier, Charles T., Carthage; N. C. Med. Coll., 1910	1912	1913
McDuffie, W. N., Hemp; Emory Univ. Sch. of Med., Atlanta, 1916	1920	1921
McLeod, A. H., Aberdeen; Balt. Med. Coll., 1896	1896	1904
McLeod, W. G., Southern Pines; Baylor Univ., 1921	1926	1927
Marr, M. W., Pinehurst; Tufts Coll. Med. School, Boston, 1907	1909	1915
Milliken, J. S., Southern Pines; Jeff. Med. Coll., 1915	1915	1916
Mudgett, W. C., Southern Pines; Maryland Med. Coll., 1903	1908	1911
O'Briant, A. L., Cameron; Jeff. Med. Coll., 1920	1920	1922
Shields, Henry B., Carthage; Atlanta Med. Coll., 1882	1887	1904
Street, M. E., Glendon; P. and S., Balt., 1893	1893	1902

NASH COUNTY SOCIETY

President: C. T. Smith, Rocky Mount; Univ. of Pa., 1918	1918	1920
Secretary: Adam T. Thorp, Rocky Mount; Univ. of Pa., 1921	1921	1923
Battle, Ivan Proctor, Rocky Mount; Jefferson Med., 1904	1905	1914
Boice, E. S., Rocky Mount; Univ. of Pa., 1909	1914	1915
Brantley, Hassell, Spring Hope; Jeff. Med. Coll., 1888	1888	1901
Brantley, J. C., Spring Hope; Jeff. Med. Coll., 1916	1916	1922
Coppedge, T. O., Nashville; P. and S., Balt., 1908	1909	1917
Cutchin, J. Henry, Whitakers; Univ. Coll. of Med., Rich., 1911	1911	1915
Daughtridge, A. L., Rocky Mount; Univ. of Md., 1924	1924	1924
Deans, A. W., Battleboro; Med. Coll. of Va., 1915	1915	1917
Denton, A. L., Castalia; Med. Coll. of Va., 1918	1921	1923
Dixon, W. H., Rocky Mount; Jefferson Med. Coll., 1919	1919	1922
Fleming, M. I., Rocky Mount; Jeff. Med. Coll., 1904	1906	1919
Gorham, H. J., Nashville;	.....	1927
Hines, E. R., Rocky Mount; Med. Coll. of S. C., 1916	1916	1917
Kinlaw, Wm. Bernard, Rocky Mount; Univ. of Pa., 1920	1920	1923
Knowles, D. L., Rocky Mount; Univ. of Pa., 1918	1918	1920
Kornegay, Lemuel W., Rocky Mount; N. C. Med. Coll., 1906	1906	1914
Lane, John L., Rocky Mount; N. C. Med. Coll., 1906	1906	1914
Large, H. Lee, Rocky Mount; Med. Coll. of Va., 1917	1918	1918
Looney, J. J. W., Rocky Mount; Univ. of Va., 1909	1919	1919
Lyon, Henry Wise, Rocky Mount; Univ. of Pa., Sch. of Med. 1918	1919	1920
Martin, J. H., Red Oak; Univ. of Nashville, 1903	1904	1916
Noell, R. H., Rocky Mount; Univ. of Md., 1916	1916	1920
Perry, E. M., Rocky Mount; P. and S., Balt., 1907	1907	1920
Quillen, Emile B., Rocky Mount; Univ. of Md., 1904	1906	1914

Speight J. A., Rocky Mount; Univ. of La., 1914	1915	1916
Speight, J. P., Rocky Mount; Jeff. Med. Coll., 1906	1906	1917
Staley, S. Walter, Rocky Mount; Med. Coll. of S. C., 1901	1901	1914
Vann, J. R., Jr., Spring Hope; Jeff. Med. Coll., 1917	1917	1919
Willis, B. C., Rocky Mount; Med. Coll. of Va., 1909	1916	1916
Winstead, J. A., Nashville; N. C. Med. Coll., 1914	1916	1916

NEW HANOVER COUNTY SOCIETY

President; Benj. R. Graham, Wilmington; Univ. of Va., 1895	1895	1916
Secretary: Geo. W. Johnson, Wilmington; Univ. of Pa., 1920	1920	1921
Bellamy, Robert H., Wilmington; Jeff. Med. Coll., 1902	1902	1902
Bowdoin, George W., Wilmington; Med. Coll. of Va., 1914	1914	1916
Broadway, R. E., Southport; Med. Coll. of S. C., 1911	1923	1926
Bullock, Ernest S., Wilmington; Univ. of Md., 1911	1911	1911
Codington, H. A., Wilmington; Univ. of Md., 1911	1915	1917
Cranmer, J. B., Wilmington; Univ. of N. C., 1905	1905	1907
Crouch, A. McR., Wilmington; Jeff. Med. Coll., 1916	1916	1918
Dosher, R. Arthur, Southport;	.....	1927
Elliott, A. H., Wilmington; Jeff. Med. Coll., 1919	1919	1921
Evans, J. E., Wilmington; Univ. of Md., 1916	1921	1916
Farthing, L. E., Wilmington; Univ. of N. C., 1906	1906	1913
Freeman, J. D., Wilmington; Med. Coll. of Va., 1918	1921	1922
Galloway, Walter Curtis, Wilmington (Hon.); Washington Univ., 1874	1880	1880
Graham, Benj. R., Wilmington; Univ. of Va., 1895	1895	1916
Green, Thomas M., Wilmington; Univ. of Md., 1901	1901	1904
Hall, James S., Wilmington; Univ. of S. Calif., 1900	1921	1924
Hamilton, John H., Wilmington; Med. Sch. of Harvard, 1916	1926	1926
Harriss, Andrew H., Wilmington (Hon.); Medico-Chirurgical Coll., Phila., 1893	1892	1894
Hoggard, J. T., Wilmington; Univ. Med. Coll., Rich., 1906	1906	1922
Honnet, Joseph H., Wilmington; Columbia Univ., 1900	1901	1904
Hooper, Joseph W., Wilmington; Univ. of Md., 1909	1912	1919
Jewett, Robert D., Wilmington (Hon.); Univ. of Va., 1888	1890	1890
Koonce, S. Everett, Wilmington; P. and S., of Balt., 1896	1896	1900
McMillan, W. D., Wilmington (Hon.); Univ. of Md., 1869	1889*	1892
Mebane, W. C., Wilmington; N. C. Med. Coll., 1905	1905	1916
Moore, Julian A., Wilmington; Univ. of Pa., 1918	1918	1921
Moore, W. Houston, Wilmington; Jeff. Med. Coll., 1910	1910	1911
Murchison, D. R., Wilmington; Johns Hopkins, 1916	1922	1923
Murphy, John G., Wilmington; Univ. of Louisville, 1903	1903	1905
Nesbitt, Charles T., Wilmington; Baltimore Med. Coll., 1893	1907	1908
Peterson, W. C., Wilmington; Univ. of Va., 1917	1920	1921
Robertson, James F., Wilmington; Univ. of Pa., 1913	1913	1916
Schonwald, John T., Wilmington (Hon.); Long Island Coll. Hosp., 1879	1880	1881
Sidbury, J. B., Wilmington; Columbia Univ., N. Y., 1912	1915	1916
Sloan, D. B., Wilmington; Univ. of Pa., 1914	1914	1920
Slocum, R. B., Wilmington; Johns Hopkins, 1905	1907	1907

*Registered.

Smith, Slade A., Wilmington; N. C. Med. Coll., 1907	1907	1921
Watson, Thomas M., Wilmington; Tulane Univ., 1919	1919	1920
Wessel, John C., Wilmington; Univ. of Md., 1900	1900	1900
Wood, E. J., Wilmington; Univ. of Pa., 1902	1903	1903

NORTHAMPTON COUNTY SOCIETY

President: Clifton G. Parker, Woodland; Univ. Coll of Med. of Va., 1907	1907	1913
Secretary:	------	------
Boone, S. B., Jackson; Univ. Coll. of Med., Va., 1911	1911	1921
Fleetwood, Jos. A., Conway; Tulane, 1921	1921	1923
Hodge, A. R., Severn; Med. Coll. of Va., 1925	1925	1926
Lewis, H. W., Jackson (Hon.); Univ. of N. Y., 1877	1889*	1887
Lister, J. L., Jackson; Med. Coll. of Va., 1896	1896	1909
McDaniel, L. E., Lasker; Univ. of Md., 1911	1915	1916
Parker, C. P., Seaboard; Univ. Coll. of Med., Va., 1915	1915	1916
Parker, Walter R., Woodland; Med. Coll. of Va., 1916	1916	1919
Vaughan, J. C., Rich Square; Med. Coll. of Va., 1915	1915	1916

ONSLOW COUNTY SOCIETY

President: John P. Henderson, Jacksonville; Va. Med. Coll., 1918	1919	1921
Secretary:	------	------
Bryan, Lorenzo D., Sneads Ferry; Tulane, 1910	1910	1911
Cox, E. L., Jacksonville (Hon.); Univ. of Md., 1889	1889	1892
Sutton, Carl W., Richlands; Tulane Med. Coll., 1905	1905	1907
Thompson, Cyrus, Jacksonville; Tulane Univ., 1878	1889*	1905

PAMLICO COUNTY SOCIETY

President: D. A. Dees, Bayboro; Balt. Med. Coll., 1903	1903	1905
Secretary: J. J. Purdy, Oriental; Med. Coll. of Va., 1900	1914	1915
Daniels, O. C., Oriental; Med. Coll. of Va., 1903	1903	1916
McCotter, St. Elmo, Bayboro; P. and S., Atlanta, 1908	1908	1909
Woodard, E. D., Bayboro; Loyola Univ., 1919	1920	1921

PASQUOTANK-CAMDEN-DARE COUNTIES SOCIETY

President:	------	------
Secretary:	------	------
Barkwell, J. H., Weeksville; Atlanta School of Med., 1908	1924	1925
Bulla, M. S., Elizabeth City; Miami Med. Coll., Cin., O., 1905	1921	1921
Combs, Howard J., Elizabeth City; Jeff. Med. Coll., 1918	1918	1919
Fearing, Isaiah, Elizabeth City; P. and S., Balt., 1896	1896	1904
Fearing, Zenas, Jr., Elizabeth City; Univ. Coll. of Med., 1901	1901	1904
Griggs, John B., Elizabeth City; Univ. of Md., 1892	1892	1904
Hoggard, Wm. Alden, Hertford, Rt. 3; Univ. Coll. Med., Va., 1907; Vanderbilt Univ., 1914	1907	1910
Hoyle, Hughes B., Manteo; N. C. Med. Coll., 1896	1896	1904
Johnston, W. W., Manteo; N. C. Med. Coll., 1913	1913	1920
Kendrick, R. L., Elizabeth City; Univ. of Va., 1913	1913	1915

*Registered.

Lister, E. W., Weeksville; Med. Coll. of Va., 1896	1896	1916
Newby, G. E., Hertford; Jeff. Med. Coll., 1900	1901	1916
Peters, W. A., Elizabeth City; Med. Coll. of Va., 1915	1915	1916
Saliba, John, Elizabeth City; Univ. of Edinburgh, Scotland, 1893	1914	1914
Sawyer, W. W., Elizabeth City; Univ. of Md., 1903	1903	1904
Stephens, W. L., Shiloh; Univ. Coll. of Va., 1912	1912	1914
Walker, H. D., Elizabeth City; Univ. of Md., 1902	1902	1902
Ward, I. A., Elizabeth City; Univ. of N. C., 1907	1907	1915
Williams, Claude B., Elizabeth City; Univ. Coll. of Med., Richmond, 1903	1903	1907

PENDER COUNTY SOCIETY

President:	-------	-------
Secretary:	-------	-------
Taylor, W. I., Burgaw; N. C. Med. Coll., 1902	1904	1905

PERSON COUNTY SOCIETY

President: Walter T. Long, Roxboro; Balt. Med. Coll., 1905	1905	1907
Secretary: Austin F. Nichols, Roxboro; Univ. of N. C., 1908	1908	1909
Beam, H. M., Roxboro; Columbia Univ., 1918	1918	1919
Gentry, Geo. W., Roxboro; Univ. of N. C., 1910	1910	1911
Love, Bedford E., Roxboro; Univ. of Md., 1904	1904	1905
Merritt, John H., Woodsdale, Rt. 1; Univ. of N. C., 1906	1907	1908
Thaxton, B. A., Roxboro; Jeff. Med. Coll., 1914	1914	1916

PITT COUNTY SOCIETY

President: Elijah T. Dickinson, Greenville; Med. Coll. of Va., 1895	1895	1900
Secretary:	-------	-------
Basnight, Thos. G., Stokes; Univ. of Md., 1904	1905	1907
Beasley, E. B., Fountain; Univ. of Pa. School of Med., 1911	1911	1915
Cox, B. T., Winterville; Univ. of Md., 1888	1888	1890
Crisp, S. M., Greenville; Univ. of Pa., 1923	1923	1925
Dawson, Walter W., Grifton; Univ. of Md., 1897	1897	1900
Dixon, G. G., Ayden; Med. Coll. of Va., 1915	1915	1917
Dixon, Joseph, Greenville; Med. Coll. of Va., 1894	1893	1895
Ellen, C. J., Greenville; Univ. Coll. of Med., Rich., 1911	1911	1919
Frizzelle, M. T., Ayden; Univ. Coll. of Med., Richmond, 1907	1907	1909
Futrell, W. E., Greenville; Jeff. Med. Coll., 1921	1921	1923
Garrenton, Cecil, Bethel; Med. Coll. of Va., 1908	1908	1915
Green, J. C., Greenville; Med. Coll. of Va., 1900	1900	1915
Hemmingway, J. D., Bethel; N. C. Med. Coll., 1915	1917	1917
Hooker, J. S., Farmville; Emory Univ., 1923	1923	1924
Joyner, C. C., Farmville	-------	1927
Laughinghouse, Chas. O'H., Greenville (Hon.); Univ. of Pa., 1893	1893	1894
Morrill, D. S., Farmville; Balt. Med. Coll., 1897	1897	1903
Morrill, Jenness, Falkland; Univ. of Md., 1888	1888	1900
Nobles, Jos. E., Greenville; Jeff. Med. Coll., 1899	1899	1902
Pace, K. B., Greenville; Jeff. Med. Coll., 1914	1914	1920

Skinner, Louis Colton, Greenville; Univ. of Md., 1901	1901	1903
Smith, Joseph, Greenville; Med. Coll. of Va., 1914	1916	1920
Smith, R. C., Grifton; Jeff. Med. Coll., 1923	1923	1926
Summerell, G. H., Ayden; Med. Coll. of Va., 1915	1917	1919
Thompson, Malcom D., Greenville; Univ. of Pa., 1922	1922	1926
Whitfield, Wm. Cobb, Grifton (Hon.); Univ. of Md., 1884	1884	1884
Wooten, W. I., Greenville; Jeff. Med. Coll., 1920	1920	1920

POLK COUNTY SOCIETY

President: E. McQueen Salley, Saluda; Univ. of Md., 1905	1905	1908
Secretary: A. J. Jervey, Tryon; Med. Coll. of S. C., 1905	1923	1925
Grady, Wm. Earle, Tryon; Univ. of Md. & P. & S., Balt., 1894	1895	1899
Lea, J. I., Tryon; Mich. Coll. of Med. & Surg., 1906	1916	1925
Palmer, M. C., Tryon; Med. Coll. of S. C., 1910	1911	1914
Smith, D. L., Saluda; S. C. Med. Coll., 1903	1926	1927

RANDOLPH COUNTY SOCIETY

President:	.....	.....
Secretary:	.....	.....
Barnes, Dempsey, Asheboro; Med. Coll. of Va., 1925	1925	1927
Barnes, Tiffany, Asheboro; Med. Coll. of Va., 1925	1925	1927
Caveness, R. L., Coleridge; Balt. Univ., 1892	1892	1925
Hayworth, C. A., Ashboro; Univ. of Md., 1913	1913	1914
Helms, T. L., Randleman; N. C. Med., 1914	1915	1917
Hubbard, Charles C., Farmer; Jeff. Med. Coll., 1888	1890	1904
Hunter, J. V., Asheboro; Univ. of Louisville, 1898	1898	1905
Lambert, W. L., Asheboro; Jeff. Med. Coll., 1921	1921	1923
Myers, R. W., R. 1, Fullers; Chattanooga Med. Coll., 1897	.....	1909
Phillips, J. W., Liberty; Geo. Washington Univ.,	1922	1923
Redding, Alex. H., Cedar Falls; Coll. of P. and S., Balt., 1887	1889*	1904
Tate, C. S., Ramseur; Balt. Med. Coll., 1893	1896	1914

RICHMOND COUNTY SOCIETY

President: Wm. Calvin Terry, Hamlet; N. C. Med. Coll., 1911; Univ. of Md., 1912	1912	1914
Secretary: A. C. Everett, Rockingham; Univ. of Md., 1897	1897	1903
Bristow, C. O., Rockingham; Jeff. Med. Coll., 1918	1920	1921
Garrett, F. B., Rockingham; N. C. Med. Coll., 1912	1912	1914
Garrett, F. J., Rockingham; Univ. of Md., 1889	1887	1904
Hatcher, M. A., Hamlet; Med. Coll. of Va., 1918	1920	1921
Henry, T. B., Rockingham; Columbia Univ. Coll. P. and S., N. Y., 1917	1920	1921
Howell, W. L., Ellerbe; N. C. Med. Coll., 1910	1910	1911
James, Albert W., Hamlet; Jeff. Med. Coll., 1918	1918	1921
James, W. D., Hamlet; Jeff. Med. Coll., 1908	1908	1908
Kinsman, Henry F., Hamlet; Univ. of Vermont, 1894	1897	1904
Ledbetter, James McQ., Rockingham; Vanderbilt Univ., 1894	1894	1903
McCreary, A. B., Rockingham; Univ. of Tenn., 1922	1924	1924
McIntosh, W. R., Rockingham; N. C. Med. Coll., 1913	1916	1917

*Registered.

Maness, J. M., Ellerbe; Univ. of N. C., 1909	1909	1910
Parsons, W. H., Ellerbe; N. C. Med. Coll., 1916	1916	1919
Teague, S. E., Hamlet, Tulane Univ. of La., 1921	1921	1925
Webb, W. P., Rockingham; Med. Coll. of S. C., 1897	1897	1904

ROBESON COUNTY SOCIETY

President: R. D. McMillan, Red Springs; Univ. of Md., 1910	1911	1912
Secretary: C. T. Johnson, Red Springs; Jeff. Med. Coll., 1920	1920	1922
Andrews, Nathan H., Rowland; N. C. Med. Coll., 1911	1911	1912
Baker, Horace M., Lumberton; Harvard Med. School, 1917	1919	1919
Beam, R. S., Lumberton; Jeff. Med. Coll., 1912	1912	1915
Bowman, E. L., McDonalds; Med. Coll. of Va., 1914	1914	1916
Britt, J. N., Lumberton; Atlanta Med. Coll., 1914	1923	1924
Brown, J. P., Fairmont; Univ. of Md., 1883	1889*	1893
Carmichael, Thaddeus W., Rowland; Ky. Univ. Med. Dept., 1904	1911	1919
Costner, Thos. F., Lumberton; Jeff. Med. Coll., 1882	1889*	1918
Evans, W. E., Rowland; Med. Coll. of Va., 1894	1894	1904
Hardin, E. R., Lumberton; Univ. of Ga., 1911	1915	1920
Hays, A. H., Fairmont; Atlanta Med., 1917	1917	1919
Hodgin, H. H., Red Springs; Univ. of Md., 1905; N. C. Med. Coll., 1906	1906	1907
Holmes, A. B., Fairmont; Jeff. Med. Coll., 1910	1910	1914
Johnson, Thomas C., Lumberton; Med. Coll. of Va., 1903	1903	1903
Knox, John, Jr., Lumberton; Univ. of Md., 1906	1907	1907
McClelland, Joseph O., Maxton; Med. Coll. of Va., 1908	1912	1913
McMillan, Benj. F., Red Springs (Hon.); Univ. of Md., 1882	1884	1884
McMillan, E. G., Maxton; Univ. of Tulane, 1919	------	1926
Martin, J. A., Lumberton; Med. Coll. of Va., 1915	1915	1917
Morris, Carlyle, Maxton; Univ. of Pa., 1922	1922	1924
Nash, J. Fred., St. Pauls; N. C. Med. Coll., 1914	1914	1916
Pope, Henry T., Lumberton; N. C. Med. Coll., 1894	1893	1902
Ricks, Leonard E., Fairmont; Med. Coll. of Va., 1896	1896	1913
Rozier, R. G., St. Pauls; Univ. of Md., 1899	1899	1904
Smith, John McNeill, Rowland; Jeff. Med. Coll., 1908	1908	1909
Stamps, Thos., Lumber Bridge (Hon.); Univ. of Louisville, 1888	1888	1890

ROCKINGHAM COUNTY SOCIETY

President:	------	------
Secretary:	------	------
Abernathy, Miles B., Reidsville; N. C. Med. Coll., 1906	1906	1910
Boaz, Thos. A., Stoneville; Coll. of P. and S., Balt., 1892	1892	1905
Carter, P. C., Madison; Univ. of Md., 1916	1916	1920
Casteen, Kenan, Leaksville; Univ. & Bellevue Hosp. Med. Coll., 1918	1919	1921
Cummings, M. P., Reidsville; Jeff. Med. Coll., 1911	1911	1914
Dicks, James F., Stoneville; Univ. Coll. Med., Va., 1901	1901	1905
Dillard, G. P., Draper; Bennett Med. Coll., 1916	1916	1919
Dixon, Hubert C., Madison; Univ. and Bellevue Hosp. Med. Coll., 1916	1916	1921

*Registered.

Fetzer, P. W., Madison; Univ. of Va. Dept. of Med., 1916	1916	1920
Jett, Samuel G., Reidsville; Univ. of the South, 1903	1908	1911
Johnson, W. A., Reidsville, R. F. D.; N. C. Med. Coll., 1907	1909	1910
McBryde, M. H., Reidsville; Univ. Coll. of Med., Richmond, 1901	1901	1904
McGehee, John Wm., Reidsville; Univ. of Md., 1904	1904	1905
Martin, Sydnor L., Leaksville; Balt. Med. Coll., 1892	1892	1904
Matthews, Wm. W., Spray; Chicago Coll. of Med. and Surg., 1913	1915	1918
Ray, John B., Leaksville; Balt. Med. Coll., 1898	1898	1898
Stewart, J. T., Summerfield, R. F. D.;	1898	1898
Stokes, P. B., King's Mountain; Med. Coll. of Va., 1917	1917	1920
Taylor, James T., Madison; Univ. of Md., Coll. of P. and S., Balt., 1908	1908	1910
Taylor, T. G., Leaksville; Ky. School of Med., 1877	1909*	1910
Tuttle, A. F., Spray; N. C. Med. Coll., 1901	1901	1907
Tyner, Carl V., Leaksville; Univ. and Bellevue Hosp. Med. Coll., N. Y., 1916	1916	1919
Webb, M. L., Mayodan; Atlanta School of Med., 1909	1924	1925
Webb, S. Edgar, Draper; Univ. of N. C., 1908	1908	1916
Wharton, Chas. R., Ruffin; Med. Coll. of Va., 1897	1897	1904
Wilson, W. P., Madison; N. C. Med. Coll., 1908	1908	1916

ROWAN COUNTY SOCIETY

President: C. W. Armstrong, Salisbury; Univ. of Md., 1914	1914	1915
Secretary: Harold H. Newman, Salisbury; Johns Hopkins Univ., 1913	1914	1916
Black, O. R., Landis; N. C. Med. Coll., 1914	1914	1918
Boger, D. T., Rockwell; N. C. Med. Coll., 1906	1906	1921
Boyden. Wm. C., China Grove; N. C. Med. Coll., 1913	1913	1914
Brawley, M. H., Salisbury; N. C. Med. Coll., 1910	1912	1914
Brawley, Robert V., Salisbury; Univ. Coll. of Med., Va., 1901	1901	1904
Brown, Clarence E., Faith; N. C. Med. Coll., 1918	1920	1921
Brown, G. A., (Hon.); Mt. Ulla; Univ. Coll. of Med., 1897	1897	1898
Busby, Julian G., Salisbury; Univ. of Md., 1904	1904	1905
Choate, Glenn Wm., Salisbury; N. C. Med. Coll., 1909	1909	1909
Choate, J. W., Salisbury; N. C. Med. Coll., 1915	1915	1924
Clement, Edward B., Salisbury; Jeff. Med. Coll., 1906	1906	1913
Council, J. B., Salisbury (Hon.); P. and S., Balt., 1885	1885	1885
Eagle, J. C., Spencer; Jeff. Med. Coll., 1923	1923	1925
Ellis, Frank A., Salisbury; Univ. of Pa., 1918	1919	1919
Flemming, G. M., Cleveland; Emory Univ. School of Med., 1919	1919	1921
Heilig, Herman G., Salisbury; Univ. of Md., 1899	1899	1904
Higgins, L. M., Salisbury; Johns Hopkins, 1920	1925	1926
Ketchie, J. M., Salisbury; Jeff. Med. Coll., 1922	1922	1925
McKenzie, B. W., Salisbury; Jeff. Med. Coll., 1916	1916	1920
McKenzie, Wm. W., Salisbury (Hon.); Jeff. Med. Coll., 1893	1893	1894
Marsh, Frank B., Salisbury; Jeff. Med. Coll., 1919	1919	1922
Monk, Henry L., Salisbury; Med. Coll. of Va., 1897	1899	1903

*Registered.

Peeler, John H., Salisbury; Va. Univ. Coll. of Med. 1899	1899	1904
Plyler, R. J., Salisbury; Univ. of Md., 1921	1924	1925
Ramsay, Jas. G., Salisbury; Univ. of Pa., 1922	1924	1924
Scales, R. B., Salisbury; Univ. of Pa., 1894	1923	1927
Seay, T. W., East Spencer; Univ. of Md., 1921	1922	1924
Shafer, Irving E., Salisbury; N. C. Med. Coll., 1914	1914	1914
Sigman, Frederick G., Spencer; Univ. Med. Coll. of Va., 1909	1909	1910
Slate, Wesley C., Spencer; Univ. of Tenn., 1903	1903	1913
Spencer, Frederick B., Salisbury; Univ. of N. C., 1909	1909	1911
Stokes, Jas. Ernest, Salisbury; Univ. of Md., 1892	1900	1901
Summerell, E. M., China Grove (Hon.); Univ. of Pa., 1883	1883	1883
Tatum, Walter Lowe, Salisbury; Jeff. Med. Coll., 1922	1922	1924
Trantham, H. T., Salisbury (Hon.); Univ. of N. Y., 1875	1879	1879
Van Poole, C. M., Salisbury (Hon.); P. and S., Balt., 1880	1880	1880
Van Poole, Carl M., Jr., China Grove; Univ. of Md., 1916	1917	1925
West, Robert M., Salisbury; Med. Coll. of Va., 1900	1900	1904
Woodson, Charles W., Salisbury; Columbia Univ., P. and S., N. Y., 1904	1905	1907

RUTHERFORD COUNTY SOCIETY

President: W. T. Head, Campobello, S. C., Rt. 4; Atlanta Coll., P. and S., 1911	1911	1923
Secretary: Wm. C. Bostic, Forest City; Chattanooga Med. Coll. 1899; N. C. Med. Coll., 1905	1905	1905
Allhands, John M., Cliffside; Chicago Coll. of Med. and Surg., 1910	1910	1911
Andrews, Robert M., Bostic; Memphis Hosp. Med. Coll., 1901	1904	1905
Biggs, Montgomery H., Rutherfordton; Univ. of Pa., 1897	1907	1908
Bostic, W. C., Jr., Forest City; Univ. of Pa., 1926	1926	1927
Buchanan, C. L., Union Mills; Tennessee Medical Coll., 1910	1910	1914
Crawford, Robt. H., Rutherfordton; Johns Hopkins, 1914	1920	1921
Duncan, Amos C., Forest City; Univ. of Va., 1919	1919	1920
Gold, Charles F., Ellenboro; Univ. of N. C., 1910	1910	1911
Harrill, L. B., Caroleen; Chattanooga Med. Coll., 1897	1902	1904
Hicks, Romeo, Henrietta; Southern Med. Coll., Atlanta, 1888	1889*	1899
Hunt, J. F., Spindale; Univ. of Tenn., 1900	1900	1912
Logan, F. W. F., Rutherfordton; N. C. Med. Coll., 1916	1916	1919
Lovelace, Thos. C., Henrietta; N. C. Med. Coll., 1917	1920	1920
Murphy, D. P., Rutherfordton; Univ. of Pa., 1916	1922	1923
Norris, Henry, Rutherfordton; Univ. of Pa., 1906	1907	1908
Reid, George P., Forest City; Univ. Coll. of Med., Va., 1895	1894	1899
Rucker, Adin Adam, Rutherfordton; Univ. of Md., 1908	1908	1909
Scruggs, F. B., Cliffside; Jeff. Med. Coll., 1919	1919	1922
Thompson, W. A., Rutherfordton; P. and S., Balt., 1885	1889*	1904
Twitty, John C., Rutherfordton; Balt. Med. Coll., 1892	1892	1904
Verner, Carl Hugh, Forest City; P. and S., Atlanta, 1912	1923	1927
Wiseman, P. H., Avondale; Med. Coll. of Va., 1925	1925	1926

*Registered.

SAMPSON COUNTY SOCIETY

President: J. Street Brewer, Roseboro; Jeff. Med. Coll., 1919	1919	1921
Secretary: Victor R. Small, Clinton; Ohio State Univ. Med. Coll., 1916	1920	1921
Crumpler, Paul, Clinton; Univ. of Tenn., 1907	1907	1908
Hollingsworth, E. T., Clinton; N. C. Med. Coll., 1912	1912	1915
Kerr, John D., Clinton; Univ. of Md., 1908	1908	1910
Lee, J. Marshall, Newton Grove; Med. Coll. of Va., 1916	1920	1923
Matthews, James O., Clinton R. F. D.; Univ. Coll. of Med., Va., 1879	1879	1902
Parker, O. L., Clinton; Med. Coll. of Va., 1918	1918	1919
Sessoms, E. T., Roseboro; N. C. Med. Coll., 1915	1915	1917
Sikes, Gibson L., Salemburg; Univ. Coll. of Med., Va., 1900	1900	1902
Sloan, Wm. H., Garland; Univ. of Maryland, 1916	1916	1920
Underwood, O. E., Roseboro; Univ. Coll. of Med., Va., 1909	1909	1910
Wilson, Robert B., Newton Grove; Ky. School of Med., 1889	1889	1904

SCOTLAND COUNTY SOCIETY

President: John S. Gibson, Gibson; Univ. of Md., 1905	1905	1907
Secretary: L. T. Buchanan, Laurinburg; Jeff. Med. Coll., 1913	1913	1917
Erwin, Evan A., Laurinburg; Med. Coll. of S. C., 1912	1912	1913
James, F. P., Laurinburg; Univ. of Pa., 1916	1916	1917
John, Peter, Laurinburg; Univ. of Md., 1897	1897	1904
Livingston, Everett Alex, Gibson; Univ. of Md., 1912	1912	1913
McLean, Allen, Wagram; Univ. of Md., 1908	1908	1911
McLean, Peter, Laurinburg; Univ. of Md., 1906	1907	1908
Pate, James G., Gibson; Univ. of Pa., 1916	1916	1917
Shaw, W. G., Wagram; P. and S., Balt., 1892	1895	1904
Wilcox, J. W., Laurel Hill; Univ. of N. C., 1906	1906	1906
Wilkes, Marcus B., Laurel Hill; N. C., Med. Coll., 1912	1923	1923

STANLY COUNTY SOCIETY

President: W. T. Shaver, Badin; Univ. of Md., 1918	1920	1921
Secretary: Julius Clegg Hall, Albemarle; Univ. Coll. of Med., Va., 1899	1899	1908
Allen, Jos. A., New London; Univ. Coll. of Med., Va., 1901	1901	1904
Campbell, Jas. I., Norwood; N. C. Med. Coll.	1898	1904
Cox, Benj. F., Palmerville; Coll. of P. and S., Balt., 1886	1886	1908
Dunlap, Lucius Victor, Albemarle; Univ. of N. C., 1909	1909	1910
Frazier, J. W., Badin; Jeff. Med. Coll., 1924	1924	1927
Gaskins, Lewis R., Albemarle; Med. Coll. of State of S. C., 1921	1924	1926
Hartsell, F. E., Oakboro; Balt. Med. Coll., 1895	1895	1902
Hathcock, Thomas A., Norwood; Univ. of Md., 1893	1893	1904
Hill, Wm. Isaac, Albemarle; Univ. of Md. and P. and S., Balt. 1897	1897	1904
Laton, James F., Albemarle; N. C. Med. Coll., 1904	1904	1910
Lentz, C. M., Albemarle; N. C. Med. Coll., 1909	1909	1910
Moore, D. Bain, Badin; Univ. Coll. of Med., Va., 1913	1913	1915

STOKES COUNTY SOCIETY

President:	------	------
Secretary:	------	------
*Ellington, Jas. H., Sandy Ridge; P. and S. Balt., 1872	------	1904
Hanes, J. L., Pine Hall; Univ. of Maryland, 1902	1902	1920
Helsabeck, C. J., Walnut Cove; Univ. of Md., 1919	1919	1922
Helsabeck, R. S., Mizpah; N. C. Med. Coll., 1913	1913	1920
Jones, A. G., Walnut Cove (Hon.): Univ. of N. Y., 1868	1894*	1892
McCanless, Wm. V., Danbury; Univ. of N. Y., 1893	1889*	1904
Stone, Grady E., King; N. C. Med. Coll., 1915	1915	1920

SURRY COUNTY SOCIETY

President: Samuel T. Flippin, (Hon.); Siloam; N. C. Med. Coll., 1898	1898	1898
Secretary: R. C. Mitchell, Mt. Airy; Univ. of Pa., 1919	1921	1923
Ashby, E. C., Mt. Airy; Univ. of Pa., 1914	1914	1916
Baird, C. A., Mt. Airy; N. C. Med. Coll., 1904	1904	1912
Bernard, Holman, Pinnacle; Med. Coll. of Va., 1912	1914	1919
Gambill, I. S., Elkin; N. C. Med. Coll., 1912	1912	1917
Garvey, R. R., Elkin; N. C. Med. Coll., 1915	1915	1919
Hollingsworth, Edward M., Mt. Airy; Coll. of P. and S., Baltimore, 1886	1886	1904
Hollingsworth, Robert E., Mt. Airy; Univ. of Va., Med. Coll., 1898	1899	1904
Lovill, Robert Jones, Mt. Airy; Univ. of Md., 1910	1910	1912
Martin, Moir S., Mt. Airy; Univ. Coll. of Med., Va., 1905	1909	1916
Ring, Joseph W., Elkin; P. and S., Balt., 1880	1890*	1904
Royall, M. A., Elkin; P. and S., Balt., 1885	1889*	1913
Salmons, H. C., Elkin; N. C. Med. Coll., 1904	1904	1908
Smith, Jas. B., Pilot Mt. (Hon.); P. and S., Balt., 1885	1889*	1896
Stone, Wesley M., Dobson; N. C. Med. Coll., 1906	1906	1907
Sumner, G. H., Ashboro; Tulane Univ., 1923	1923	1924
Taylor, William S., Mt. Airy; Jeff. Med. Coll., 1873	1889*	1894
Wellborn, William R., Elkin; N. C. Med. Coll., 1905	1908	1913
Woltz, J. L., Mt. Airy; Southern Med. Coll., 1897	1902	1904

SWAIN COUNTY SOCIETY

President:	------	------
Secretary:	------	------

TRANSYLVANIA COUNTY SOCIETY

President:	------	------
Secretary:	------	------
English, Edwin S., Brevard; Univ. of the South, 1901	1902	1904
Lyday, Abram E., Penrose; Lincoln Mem. Univ., 1891	1899	1904
Lyday, Wm. Monroe, Brevard; Coll. of P. and S., 1885	1889*	1904
Stokes, R. L., Brevard; P. and S., Balt., 1903	1921	1925
Summey, T. J., Brevard; Jeff. Med. Coll., 1915	1915	1926
Wilkerson, J. B., Rosman; Memphis Hosp. Med. Coll.,	1923	1925

*Registered.

UNION COUNTY SOCIETY

President: John J. Goudelock, Monroe; Med. Coll. of S. C., 1923	1924	1924
Secretary: Raymond Pearson, Monroe; N. C. Med. Coll., 1922	1923	1924
Ashcraft, J. E., Monroe; Univ. of N. Y., 1887	1887	1890
Blair, M. P., Marshville; Med. Coll. of Va., 1895	1895	1895
Bynum, C. M., Marshville; Med. Coll. of Va., 1914	1914	1918
Ezzell, S. H., Waxhaw; Atlanta Coll. of P. and S., 1900	1910	1906
Garren, R. H., Monroe; Univ. of Nashville, 1900	1901	1904
Love, William M., Monroe; N. C. Med. Coll., 1915	1915	1919
Mahoney, A. F., Monroe; Univ. Louisville, 1911	1923	1924
Neal, John W., Monroe; N. Y. Univ. Med. Coll., 1884	1887	1904
Payne, R. L., Monroe; Tulane Univ. 1911	1911	1912
Perkins, David R., Marshville; Balt. Med. Coll., 1903	1906	1907
Pruitt, G. C., Monroe; Atlanta Coll. of P. and S., 1911	1920	1920
Richardson, Jas. C., Monroe; Vanderbilt Univ., 1920	1920	1923
Smith, G. M., Monroe; N. C. Med. Coll., 1914	1914	1919
Stevens, Samuel A., Monroe; Univ. of Md., 1900	1898	1898
Stewart, H. D., Monroe; Univ. of Md., 1898	1898	1904
Thomas, J. E., Waxhaw;		1927
Whitley, A. D. N., Monroe; Univ. of Md., 1897	1897	1904
Williams, Edward J., Monroe; Univ. and Bellevue Hosp. Med. Coll., 1917	1920	1921

VANCE COUNTY SOCIETY

President: J. H. Wheeler, Henderson; Jeff. Med. Coll., 1918	1918	1920
Secretary: A. P. Newcombe, Jr., Henderson; Jeff. Med. Coll., 1922	1922	1924
Allen, Benjamin G., Henderson; Columbia Univ., 1904	1904	1908
Cheatham, Goode, Henderson; N. C. Med. Coll., 1895	1895	1920
Fenner, Edwin F., Henderson; Univ. of Md., 1905	1906	1908
Furman, Wm. H., Henderson; Jeff. Med. Coll., 1910	1910	1912
Gill, Robt. J., Henderson; Univ. of Pa., 1867	1889*	1900
Harris, Fletcher R., Henderson (Hon.); Univ. of Va., 1881	1883	1883
Newell, H. A., Henderson; P. and S., Balt., 1906	1906	1907
Royster, Thomas S., Henderson; Univ of Pa., 1916	1916	1924
Upchurch, Robert T., Henderson; Jeff. Med. Coll., 1908	1908	1910

WAKE COUNTY SOCIETY

President: J. W. Ashby, Raleigh; Univ. of Md., 1905	1921	1922
Secretary: Louis N. West, Raleigh; Jeff. Med. Coll., 1912	1912	1915
Abernethy, Claude O., Raleigh; Univ. of N. C., 1906	1906	1907
Adams, R. K., Raleigh; Jeff. Med. Coll., Phila., 1912	1912	1916
Anderson, Albert, Raleigh (Hon.); Univ. of Va., 1888	1889	1890
Barbee, G. S., Zebulon; Univ. of N. C., 1910	1910	1912
Bell, Carl W., Raleigh; Coll. of P. and S., Balt., 1914	1915	1916
Brackin, H. B., Raleigh; Univ. of Tenn., 1921	1923	1925
Buffaloe, J. S., Garner; Balt. Med. Coll., 1900	1900	1904

*Registered.

Bugg, C. R., Raleigh; Johns Hopkins Med. Sch., 1922	1924	1925
Bulla, A. C., Raleigh; N. C. Med. Coll., 1915	1915	1918
Burt, B. W., Holly Springs; P. and S., Balt., 1886	1886	1904
Byrd, W. G., Raleigh;		1927
Campbell, Alton C., Raleigh; Univ. of N. C., 1910	1910	1912
Carpenter, Coy C., Wake Forest; Syracuse Univ. 1924	1924	1927
Carroll, E. D. Dixon, Raleigh; Woman's Med. Coll., N. Y., 1895	1900	1900
Caveness, Zebulon M., Raleigh; Univ. of N. C., 1903	1903	1903
Caviness, V. S., Raleigh; Jeff. Med. Coll., 1921	1921	1925
Cheek, C. E., Fuquay Springs; Univ. Coll. of Med., Va., 1912	1912	1914
Cooper, G. M., Raleigh; Univ. Coll. of Med., Richmond, 1905	1905	1906
Cozart, W. S., Fuquay Springs; Med. Coll. of Va., Rich., 1914	1914	1917
Dewar, Wm. B., Raleigh; Univ. of Pa., 1920	1920	1923
Edwards, C. J., Raleigh; Med. Coll. of Va., 1917	1921	1923
Finch, O. E., Raleigh; Jeff. Med. Coll., 1915	1915	1917
Flowers, Clarence A., Wendell; P. and S., Balt., 1905	1907	1910
Flowers, C. E., Zebulon; Med. Coll. of Va., 1913	1915	1916
Foley, C. E., Raleigh; Univ. Med. Coll., Richmond, 1913	1924	1925
Fowler, M. L., Zebulon; Coll. of P. and S., Balt., 1881	1889*	1904
Freeman, R. H., Raleigh; Jeff. Med. Coll., 1908	1908	1919
Gibson, M. R., Raleigh; Univ. of Md., 1905	1905	1914
Goodwin, A. W., Raleigh (Hon.); Bellevue Hosp. Med. Coll., 1887	1887	1887
Goodwin, O. S., Raleigh; Jeff. Med. Coll., 1923	1923	1926
Haywood, Hubert, Raleigh (Hon.); Bellevue Hosp. Med. Coll., 1879	1879	1879
Haywood, Hubert B., Jr., Raleigh; Univ. of Pa., 1909	1909	1910
Hester, Jos. R., Knightsdale; Univ. of N. C., 1910	1910	1912
Hicks, V. M., Raleigh; Jeff. Med. Coll., 1918	1918	1921
Horton, M. C., Raleigh; Univ. Coll. of Med., Va., 1903	1911	1911
Horton, W. C., Raleigh; P. and S., Balt., 1897	1896	1904
Jenkins, Charles L., Raleigh (Hon.); N. Y. Univ. Med. Coll., 1890	1890	1894
Jordan, Thos. M., Raleigh (Hon.); P. and S., Balt., 1881	1881	1882
Judd, Eugene C., Raleigh; Univ. of Pa., 1911	1911	1912
Judd, James M., Varina; Balt. Med. Coll., 1897	1897	1901
Kitchin, Thurman D., Wake Forest; Jeff. Med., 1908	1908	1908
Knox, Augustus W., Raleigh (Hon.); Bellevue Hosp. Med. Coll., 1874	1878	1880
Lane, Bessie, Raleigh; Woman's Med. Coll. of Pa., 1921	1921	1926
Lawrence, B. J., Raleigh; Jeff. Med. Coll., 1918	1918	1920
Lowery, John R., Raleigh; Univ. of Md., 1904	1904	1913
McDowell, F. C., Zebulon; Univ. of Pa., 1902	1913	1916
McGee, James Wm., Raleigh (Hon.); Bellevue Hosp. Med. Coll., 1888	1888	1888
McKee, John S., Raleigh; Univ. of Md., 1907	1908	1909
Mitchener, J. S., Raleigh; Johns Hopkins Univ., 1915	1915	1918
Neal, Kemp P., Raleigh; Harvard, 1917	1920	1921
Neal, Paul N., Raleigh; Harvard, 1919	1920	1921

*Registered.

Noble, R. P., Raleigh; Univ. of N. C., 1907	1907	1916
Owen, J. F., Dix Hill, Raleigh; Jeff. Med. Coll.,	1920	1927
Proctor, I. M., Raleigh; Univ. of N. C., 1913; Univ. of Pa., 1915	1915	1917
Ray, O. L., Raleigh; Rt. 1; Univ. Coll. of Med., Richmond, 1899	1899	1904
Register, F. M., Raleigh; Ky. School of Med., 1893	1891	1918
Rogers, Jas. Rufus, Raleigh; P. and S., Balt., 1886	1886	1904
Root, Aldert S., Raleigh; Univ. of Pa., 1911	1911	1913
Royster, Hubert A., Raleigh (Hon.); Univ. of Pa., 1894	1894	1895
Royster, W. I., Raleigh (Hon.); Bellevue Hosp. Med. Coll., N. Y., 1869	1869	1874
Shore, Clarence A., Raleigh; Johns Hopkins, 1908	1909	1909
Sisk, C. N., Raleigh; Univ. of Nashville, 1905	1922	1923
Soady, J. H., Garner; McGill Univ., 1903; Toronto Univ., 1905	1924	1926
Strickland. W. M., Wendell; Med. Coll. of Va., 1919	1921	1923
Templeton, James M., Cary; Balt. Med. Coll., 1882	1882	1893
Thompson, Hugh A., Raleigh; Univ. of Pa., 1914	1914	1917
Turner, H. G., Raleigh; Univ. of Pa., 1906	1907	1925
Vann, H. M., Wake Forest; Jeff. Med. Coll., 1917	1920	1923
Ward, W. T., Raleigh; Univ. of Md., 1925	1925	1927
Washburn, B. E., Kingston, Jamaica; Univ. of Va., 1911	1912	1917
Watson, John B., Raleigh; Univ. of N. C., 1908	1908	1909
Wilkins, R. B., Raleigh; N. C. Med. Coll., 1913	1913	1915
Wilkerson, Charles B., Raleigh; Univ. of N. C., 1906	1906	1908
Wilkinson, C. T., Wake Forest; Tulane Univ., 1922	1922	1923
Wilkinson, R. W., Jr., Wake Forest; Tulane Univ., 1922	1923	1924
Wright, J. B., Raleigh; Univ. Coll. of Med., Va., 1899	1899	1900
Yarborough, Frank, Cary; Univ. of Penn., 1923	1925	1926
Young, L. B., Wake Forest, Rt. 3; P. and S., Balt., 1886	1886	1906

WARREN COUNTY SOCIETY

President:		
Secretary: W. D. Rodgers, Warrenton; Jeff. Med. Coll., 1913	1913	1915
Foster, H. H., Norlina; Jeff. Med. Coll., 1919	1919	1923
Holt, T. J., Warrenton; Med. Coll. of Va., 1904	1904	1911
Macon, G. H., Warrenton; Univ. Coll. of Med., Va., 1910	1910	1911
Peete, C. H., Warrenton; Univ. of Pa., 1903	1906	1911

WASHINGTON-TYRRELL COUNTIES SOCIETY

President: John W. Speight, Roper; Ky. School of Med., 1885	1885	1904
Secretary: T. L. Bray, Plymouth; Univ. of Md., 1916	1916	1919
Chapin, S. C., Columbia		
Halsey, Benj. F., Roper (Hon.); Vanderbilt Univ., 1893	1895	1894
McGowan, Claudius, Plymouth; Med. Coll. of Va., 1917	1917	1922
Mariner, M. B., Belhaven; Univ. Coll. of Med., Va., 1903	1903	1903
Norman, J. Standing, Columbia; P. and S., Balt., 1909	1911	1920
Ward, William H., Plymouth (Hon.); Univ. of Md., 1881	1886	1886

WAYNE COUNTY SOCIETY

President: John Spicer, Goldsboro; Bellevue Med. Coll., 1889	1890	1904
Secretary: A. G. Woodard, Goldsboro; Univ. of N. C., 1907	1907	1909

Best, D. E., Goldsboro; Univ. of Md., 1924	1924	1926
Bizzell, M. E., Goldsboro; Tulane Univ., 1923	1923	1925
Bizzell, Thomas M., Goldsboro; Univ. of Md., 1908	1908	1916
Cobb, Donald, Goldsboro; Univ. of Pa., 1921	1921	1926
Cobb, W. H., Jr., Goldsboro; Jeff. Med. Coll., 1889	1889	1890
Corbett, L. W., Goldsboro; Med. Coll. of S. C., 1915	1925	1924
Crawford, W. B., Goldsboro; Bellevue Hosp., N. Y., 1886	1886	1890
Crawford, W. J., Goldsboro; Med. Coll. of Va., 1922	1922	1923
Dale, G. C., Goldsboro; Univ. of Pa., 1925	1925	1927
Henderson, C. C., Mt. Olive; Univ. of Md., 1914	1914	1919
Henderson, T. B., Goldsboro; Med. Coll. of Va., 1906	1914	1915
Howard, C. E., Goldsboro; Univ. of Pa., 1925	1925	1927
Irwin, Henderson, Goldsboro; Univ. of Md., 1912	1914	1916
Ivey, H. B., Goldsboro; Univ. Coll. of Med., Richmond, 1911	1911	1917
Lassiter, C. L., Fremont; Jeff. Med. Coll., 1915	1915	1918
Linville, W. C., Goldsboro; Univ. of Md., 1903	1903	1923
Lister, J. L., Mt. Olive; Med. Coll. of Va., 1896	1896	1909
Miller, Robert B., Goldsboro; Med. Coll. of Va., 1898	1900	1902
Morris, George B., Goldsboro; Univ. of Md., 1910	1910	1912
Morris, G. Dillon, Goldsboro; Univ. of Pa., 1924	1924	1926
Parker, S. F., Mount Olive; Med. Coll. of Va., 1901	1918	1922
Person, Edgar Cooper, Pikeville; Med. Coll. of Va., 1905	1905	1908
Person, H. M., Goldsboro; N. C. Med. Coll., 1913	1913	1916
Rose, David J., Goldsboro; Tulane Univ., 1922	1922	1924
Smith, R. A., Goldsboro (Hon.); Bellevue Hospital, 1882	1882	1887
Smith, Wm. H., Goldsboro; Univ. of Pa., 1906	1907	1912
Spicer, William, Goldsboro; Bellevue Hosp. Med. Coll., 1898	1897	1904
Steel, Wm. C., Mt. Olive; Univ. of Md., 1891	1891	1894
Strosnider, Charles F., Goldsboro; Univ. of Md., 1909	1910	1913
Sutton, William G., Seven Springs; Jeff. Med. Coll., 1889	1889	1896
Warrick, L. A., Goldsboro; Geo. Washington Univ., 1923	1923	1924
Whelpley, Frank L., Goldsboro; Missouri Univ., 1902	1918	1918
Wilkins, J. W., Mt. Olive; Med. Coll. of Va., 1913	1913	1917

WILKES COUNTY SOCIETY

President: Julian E. Duncan, N. Wilkesboro; Univ. Coll. of Med., Richmond, 1907	1907	1908
Secretary: C. S. Sink, N. Wilkesboro; N. C. Med. Coll., 1912	1912	1918
Craven, F. C., N. Wilkesboro; Univ. of Md., 1913	1913	1914
Eller, Albert J., Readybranch; P. and S., Balt., 1893	1895	1898
Hubbard, Fred C., North Wilkesboro; Jeff. Med. Coll., 1918	1919	1921
Hutchins, E. M., N. Wilkesboro; N. C. Med. Coll., 1896	1896	1904
McNeill, James H., North Wilkesboro; Geo. Wash. Univ. 1926	1926	1927
Pegram, R. W. S., Canton; Balt. Med. Coll., 1892	1894	1907
Somers, L. P., New Castle; Univ. of Md., 1897	1889*	1904
Triplett, W. R., Purlear; N. C. Med. Coll., 1914	1915	1920
Tucker, W. A., North Wilkesboro; Jeff. Med. Coll., 1925	1925	1927
White, John W., Wilkesboro (Hon.); Jeff. Med. Coll., 1889	1889	1890

*Registered.

WILSON COUNTY SOCIETY

President: George W. Mitchell, Wilson; Univ. Coll. of Med., 1913	1913	1920
Secretary: C. L. Swindell, Wilson; Univ. of Md., 1909	1909	1920
Anderson, Wade H., Wilson; Univ. of Va., 1902	1904	1904
Barnes, Benjamin F., Elm City; Univ. of Md., 1902	1902	1902
Bell, G. E., Wilson; Jeff. Med. Coll., 1921	1921	1922
Best, Henry B., Wilson; Univ. of N. C., 1907	1907	1908
Blackshear, T. J., Wilson; Emory Univ., 1914	1923	1924
Bradshaw, T. G., Wilson; Med. Coll. of Va., 1909	1924	1924
Brooks, G. M., Elm City; Jeff. Med. Coll., 1918	1919	1919
Darden, D. B., Stantonsburg; Univ. of Pa., 1921	1924	1926
Eagles, Charles S., Saratoga; Univ. of N. C., 1909	1909	1910
Grady, Leland V., Wilson, Rt. 2; N. C. Med. Coll., 1913	1913	1914
Hackney, Ben H., Lucama; Tulane Univ., 1911	1911	1913
Herring, Benj. S., Wilson; Univ. of Mich., 1900	1901	1901
Hoover, H. R., Wilson; Balt. Med. Coll., 1891	1892	1904
Lamm, Isaac W., Lucama; Univ. Coll. of Med., Va., 1899	1899	1900
Lane, P. P., Wilson; Univ. of Md., 1908	1908	1920
Lewis, Geo. W., Wilson (Hon.); Univ. of Md., 1886	1885	1894
Marlowe, W. H., Wilson	------	------
McClees, E. C., Elm City; Med. Coll. of Va., 1917	1920	1920
Moore, Chas. E., Wilson (Hon.); Bellevue Hosp. Med. Coll., 1875	1875	1875
Moore, Edwin G., Elm City (Hon.); Univ. of Md., 1883	1883	1890
Moore, K. C., Wilson; Univ. of Mich., 1909	1909	1910
Person, T. E., Stantonsburg; N. C. Med. Coll., 1911	1911	1914
Pittman, M. A., Wilson	------	1927
Powell, H. H., Stantonsburg; Med. Coll. of Va., 1911	1911	1914
Putney, R. H., Elm City; Med. Coll. of Va., 1914	1914	1920
Saliba, Michael M., Wilson; Balt. Med. Coll., 1897	1910	1910
Smith, A. Jones, Black Creek; Univ. of Pa., 1921	1921	1923
Smith, L. J., Wilson; Jeff. Med. Coll., 1912	1917	1918
Strickland, Ernest L., Wilson; Med. Coll. of Va., 1916	1916	1917
Williams, Albert F., Wilson; Univ. of Md., 1901	1901	1904
Willis, H. C., Wilson; Memphis P. and S., 1911	1916	1924
Woodard, C. A., Wilson; Univ. of Va., 1904	1904	1920
Woodard, G. B., Wilson; Med. Coll. of Va., 1915	1915	1916

YADKIN COUNTY SOCIETY

President:	------	------
Secretary:	------	------
Bryant, Charles G., Jonesville; Louisville Med. Coll., 1894	1903*	1904
Leak, Wharton G., East Bend; N. C. Med. Coll., 1900	1899	1904

YANCEY COUNTY SOCIETY

President:	------	------
Secretary:	------	------

*Registered.

Cheadle, C. M., Micaville; Keokuk Med. Coll., 1898	1919	1921
Fairchilds, J. M., Celo;	-------	1927
Gibbs, J. B., Burnsville; Tenn. Med. Coll., 1900; N. C. Med. Coll., 1904	1904	1919
McLean, I. N., Burnsville	-------	1927
Morgan, C. H., Higgins; Tenn. Med. Coll., 1900	-------	1927
Peek, W. A., Ramseytown; non-graduate	1905*	1919
Robertson, W. Burdett, Burnsville	-------	1927

*Registered.

ALPHABETICAL LIST OF MEMBERS

WITH POSTOFFICE ADDRESSES

Name	*Address*
Abel, J. F.,	Waynesville
*Abernethy, Claude O.	Raleigh
Abernathy, H. N.	Charlotte
*Abernathy, Miles B.	Reidsville
Abernethy, E. A.	Chapel Hill
Adams, C. A.	Durham
Adams, Charles E.	Gastonia
Adams, Edw. E.	Murphy
Adams, J. L.	Asheville
*Adams, M. R. (Hon.)	Statesville
Adams, N. B.	Murphy
*Adams, R. K.	Raleigh
Ader, O. L.,	Walkertown
*Adkins, M. T.	Durham
Alexander, Annie L. (Hon.)	Charlotte
Alexander, Geo.	Asheville
Alexander, James M.	Statesville
Alexander, Jas. R.	Charlotte
Alexander, M. Janet	Montgomery India (Mecklenburg Co.)
*Allan, William	Charlotte
*Allen, Benjamin G.	Henderson
Allen, Chas. I.	Wadesboro
Allen, Jos. A.,	New London
Allen, Rufus L.	Waynesville
Allen, W. O.	Hendersonville
*Allgood, R. A.	Fayetteville
Allhands, John M	Cliffside
Ambler, Arthur C.	Asheville
Ambler, Chase P. (Hon.)	Asheville
Anders, McT. G.	Gastonia
*Anderson, Albert (Hon.)	Raleigh
*Anderson, Chas A.	Burlington
Anderson, James A.	Gastonia
Anderson, James G.	Asheville
*Anderson, Thos Eli (Hon.)	Statesville
Anderson, Wade H.	Wilson
Andrews, Nathan H.	Rowland
Andrews, Robert M.	Bostic
Angel, Frank	Franklin
Anthony, J. E.	Kings Mountain
Archer, Isaac J.	Black Mountain
Armstrong, C. W.	Salisbury
*Ashby, E. C.	Mount Airy
*Ashby, J. W.	Raleigh
Ashcraft, J. E.	Monroe
*Ashe, J. R.	Charlotte
Ashworth, B. L.	Marion
*Ashworth, W. C.	Greensboro
Austin, J. W. O.A.L.R.	High Point
*Averitt, K. G.	Cedar Creek
Aycock, F. M.	Princeton
*Aydlett, H. T.	Greensboro
Aydlette, Jos. P.	Earl
Bailey, K. H.	Honolulu, Hawaii
Baird, C. A.	Mount Airy
Baker, Horace M.	Lumberton
Baker, J. M. (Hon.)	Tarboro
Baker, W. E.	Arden
Ball, M. W.	New Bern
Bandy, W. G.	Lincolnton
Bangle, J. A.	Concord
*Banner, A. C., O.A.L.R.	Greensboro
*Banner, Chas W., O.A.L.R.	Greensboro
Barbee, G. S.	Zebulon
Barber, Y. M.	Macclesfield
Barefoot, Graham B.	Chadbourn
Barefoot, M. L.,	Dunn, Rt. 6
Barker, C. S.	New Bern
Barkwell J. H.	Weeksville
Barnes, B. F.	Elm City
Barnes, Dempsey	Ashboro
Barnes, Tiffany	Ashboro
Barret, H. P.	Charlotte
*Barron, A. A.	Charlotte
*Basnight, Thos. G.	Stokes
*Bass, H. H.	Durham
*Bass, Spencer P.	Tarboro
Battle, Geo. C.	Asheville
Battle, Ivan P.	Rocky Mount
*Battle, John T. J. (Hon.)	Greensboro
Battle, S. W. (Hon.)	Asheville

*Present at 1927 Meeting at Durham

Name	*Address*
*Baynes, R. H.	Durham
Beall, L. G.	Black Mountain
Beall, Wm. P. (Hon.)	Greensboro
Beam, H. M.	Roxboro
*Beam, R. S., O.A.L.R.	Lumberton
Beasley, E. B.	Fountain
*Beckwith, R. P.	Roanoke Rapids
Belk, Geo. W.	Gastonia
*Bell, A. E.	Mooresville
Bell, Carl W.	Raleigh
Bell, G. E.	Wilson
Bell, J. C.	Maysville
Bellamy, Robt. H.	Wilmington
Belton, J. F.	Winston-Salem
Benbow, J. T.	Winston-Salem
Bender, E. L.	New Bern
Bennett, E. C.	Elizabethtown
Bennett, Jos. H.	Wadesboro
Bennett, W. H.	Sanford
Bernard, Holman	Pinnacle
Berry, John	Greensboro
*Best, Benj. W.	Greensboro
Best, D. E.	Goldsboro
Best, Henry B.	Wilson
Biggart, Wm. P.	Charlotte
Biggs, Montgomery H.	Rutherfordton
Bigler, V. L.	Kinston
Billings, G. M.	Morganton
*Bitting, Numa Duncan	Durham
*Bittinger, S. M.	Sanatorium
*Bizzell, M. E.	Goldsboro
*Bizzell, Thos. M.	Goldsboro
Black, George Wm.	Pineville
Black, O. R.	Landis
Blackburn, T. C.	Hickory
Blackshear, T. J., O.A.L.R.	Wilson
*Blair, Andrew	Charlotte
*Blair, A. McNiel	Southern Pines
Blair, J. L.	Gastonia
Blair, M. P.	Marshville
Blakey, R. A.	Fayetteville
Blalock, B. K.	Charlotte
Blanchard, T. W.	Hobbsville
Blevins, Manly	West Jefferson
Blue, A. McN.	Carthage
Blue, Waylon	Jackson Springs
Boaz, Thos. A.	Stoneville
*Boddie, Needham P. (Hon.)	Durham
Boger, D. T.	Rockwell
Boice, E. S.	Rocky Mount
*Bonner, J. B.	Aurora
*Bonner, K. P. B.	Morehead City
*Bonner, O. B., O.A.L.R.	High Point
*Booker, L. S.	Durham
Boone, S. B.	Jackson
*Boone, W. H.	Durham
*Boone, W. W.	Durham
*Bost, T. C.	Charlotte
Bostic, Wm. C.	Forest City
Bostic, W. C., Jr.	Forest City
Bowdoin, Geo. W.	Wilmington
Bowers, M. A.	Winston-Salem
*Bowles, Francis N.	Durham
Bowman, E. L.	McDonalds
Bowman, H. E.	Aberdeen
*Bowman, H. P.	Greensboro
*Bown, Herbert H.	Asheville
Boyden, W. C.	China Grove
Boyer, Maj. Gouveneur H.	Ft. Bragg
Boyette, E. C.	Charlotte
Boyles, J. H.	Greensboro
Boyles, M. F.	Dallas
Brackett, W. E.	Hendersonville
Brackin, H. B.	Raleigh
Braddy, Wade H.	Burlington
Bradshaw, T. G.	Wilson
*Brantley, Hassell	Spring Hope
Brantley, J. C.	Spring Hope
Braswell, Wm. Edgar	Marshallberg
Brawley, M. H., O.A.L.R.	Salisbury
*Brawley, Robt. V., O.A.L.R.	Salisbury
Bray, T. L.	Plymouth
Brenizer, A. G., Jr.	Charlotte
*Brewer, J. S.	Roseboro
*Bridger, D. H.	Bladenboro
*Briggs, H. H., O.A.L.R.	Asheville
*Brinkley, H. M.	West Durham
Brinn, T. P.	Hertford
*Bristow, C. O.	Rockingham
Britt, C. S.	Charlotte
Britt, J. N.	Lumberton
*Britt, T. C.	Beaufort
*Brittle, Paul C.	Burlington
*Broadway, R. E.	Southport
*Brockmann, Harry L.	High Point
*Brooks, B. U.	Durham
*Brooks, G. M.	Elm City
Brooks, Hugh M.	Whitetop, Va.

Name	*Address*
*Brooks, R. E.	Burlington
Brookshire, H. G.	Asheville
Broun, Matthew S., O.A.L.R.	Asheville
Brown, Clarence E.	Faith
Brown, E. M.	Washington
Brown, G. A. (Hon.)	Mt. Ulla
Brown G. W.	Raeford
*Brown, J. P.	Fairmont
*Brown, J. S. (Hon.)	Hendersonville
*Brown, J. S., Jr.,	Hendersonville
Brownson, Wm. C. (Hon.)	Asheville
Bryan, Lorenzo D.	Snead's Ferry
Bryant, Chas. G.	Jonesville
Buchanan, C. L.	Union Mills
Buchanan, E. J.	Lexington
Buchanan, L. T.	Laurinburg
*Buchanan, S. E.	Brevard
*Buck, David M.	Asheville
Buckner, J. M.	Swannanoa
Buffaloe, J. S.	Garner
*Bugg, C. R.	Raleigh
*Buie, Roderick M.	Greensboro
*Bulla, A. C.	Raleigh
Bulla, M. S.	Elizabeth City
Bullard, G. F.	Elizabethtown
*Bullitt, J. B.	Chapel Hill
Bullock, Thos. C.	Autryville
Bullock, W. B.	Oxford
*Bulluck, Ernest S.	Wilmington
Bunn, J. J.	Mt. Pleasant
Burleson, W. B.	Plumtree
Burleyson, L. N.	Concord
Burress, D. A.	High Point
*Burrus, John T. (Hon.)	High Point
Burnett, Isaac E.	Mars Hill
*Burt, B. W.	Holly Springs
*Burt, S. P.	Louisburg
Busby, Julian G.	Salisbury
*Butler, Leroy J.	Winston-Salem
Butt, R. B.	Marion
Butt, Virgil R.	Bakersville
Byerly, Andrew B.	Cooleemee
*Byerly, Wesley Grimes	Sanatorium
Bynum, C. M.	Marshville
Bynum, John (Hon.)	Winston-Salem
Byrd, W. C.	Morrisville, Rt. 1
*Byrd, W. G.	Raleigh
*Caldwell, D. G.	Concord
Caldwell, J. H.	Charlotte
*Campbell, Alton C.	Raleigh
*Campbell, A. S.	Durham
Campbell, Jas. I.	Norwood
Campbell, J. W.	Gastonia
Candler, Chas. Z.	Sylva
Cannady, Sam H.	Oxford
*Carlton, R. L.	Winston-Salem
Carmichael, T. W.	Rowland
Carpenter, Coy C.	Wake Forest
Carr, Eugene M	Asheville
Carr, M. L.	LaGrange
*Carr, Ransom Lee	Rose Hill
*Carrington, G. L.	Durham
Carroll, E. D. Dixon	Raleigh
*Carroll, F. W.	Hookertown
Carroll John W.	Wallace
*Carter, H. W., O.A.L.R.	Washington
*Carter, P. C.	Madison
Casstevens, J. C.	Clemmons
*Casteen, Kenan	Leaksville
*Castelloe, Cola	Windsor
*Cater, C. D.	Greensboro
Cathell, J. E.	Moncure
Caton, Geo. A.	New Bern
Caveness, R. L.	Coleridge
Caveness, Zebulon M.	Raleigh
*Caveness, V. S.	Raleigh
Chambers, P. P.	Asheville
Chapin, S. C.	Columbia
Chapin, Wm. Burdette	Pittsboro
Cheadle, C. M.	Micaville
*Cheatham, Goode	Henderson
*Cheek, C. E.	Fuquay Springs
Cheesborough, Thos. P.	Asheville
Chester, P. J., O.A.L.R.	Fayetteville
Choate, Glenn Wm.	Salisbury
Choate, J. W. (Hon)	Salisbury
Christian, Thos. D.	Greensboro
Clark, D. D.	Clarkton
Clark, E. S.	Clarkton
Clark, H. S.	Asheville
*Clement, Edward B., O.A.L.R.	Salisbury
Cliff, B. F.	Hendersonville
Clinton, Roland S.	Gastonia
Clodfelter, C. M.	Lexington
Cloninger, L. V.	Statesville
Clyatt, Claude Eugene	Denton
Coats, Maj. Edward A.	Fort Bragg

Name	*Address*
*Cobb, Donald	Goldsboro
*Cobb, Wm. H., Jr.,	Goldsboro
Cochran, J. D.	Newton
*Cocke, C. H.	Asheville
Cocke, E. R.	Asheville
Cocke, Jere E.	Asheville
Codington, H. A.	Wilmington
*Coe, Samuel S.	High Point
Coffey, Lawrence H., 911 E. Main St., Lakeland, Fla.	(Caldwell Co.)
Colby, C. DeW.	Asheville
*Cole, Walter F.	Greensboro
*Coleman, G. S.	Kenly
Collings, Ruth M.	Greensboro
Coltrane, Wallace E.	Dunn
Combs, Howard J.	Elizabeth City
Cooke, H. L.	Fayetteville
Cooke, G. C.	Winston-Salem
*Cooper, G. M.	Raleigh
Coppedge, T. O.	Nashville
*Coppridge, W. M.	Durham
*Corbett, L. W.	Goldsboro
Corpening, O. J.	Granite Falls
Costner, Thos. F.	Lumberton
Costner, W. V.	Lincolnton
Cotten, Clyde E.	Asheville
Couch, V. F.	Winston-Salem
Council, J. B. (Hon.)	Salisbury
Cowell, Will H.	Shawboro
Cox, Benj. F.	Palmerville
Cox, B. T.	Winterville
Cox, E. L. (Hon.)	Jacksonville
Cox, G. S.	Tabor
Cox, Thomas A.	Hertford
Cozart, S. R.	Greensboro
*Cozart, W. S.	Fuquay Springs
Craddock, A. B.	Asheville
*Craig, S. Douglas	Winston-Salem
Cranmer, J. B.	Wilmington
Craven, F. C., O.A.L.R.	N. Wilkesboro
Craven, Thomas	Huntersville
Craven, W. W.	Charlotte
Crawford, Robt. H.	Rutherfordton
Crawford, W. B.	Goldsboro
Crawford, W. J.	Goldsboro
*Crews, N. H.	High Point
*Crisp, S. M.	Greenville
*Cromartie, R. S.	Elizabethtown
*Crouch, A. McR.	Wilmington
Crouch, T. D.	Stony Point
Crow, S. L.,	Asheville
*Crowell, A. J. (Hon.)	Charlotte
*Crowell, L. A. (Hon.)	Lincolnton
Crowell, W. H.	Whiteville
Crumpler, Paul	Clinton
Cummings, M. P.	Reidsville
Currie, D. S.	Parkton
*Cutchin, J. Henry	Whitakers
Dale, G. C.	Goldsboro
Daligny, Charles (Hon.)	Troy
Dalton, David N. (Hon.)	Win.-Salem
Dalton. Wm. N.	Winston-Salem
Dameron, Ernest L.	Star
*Daniel, N. C.	Oxford
*Daniels, O. C., O.A.L.R.	Oriental
*Daniels, R. L.	New Bern
Darden, D. B.	Stantonsburg
Darden, O. B.	Richmond, Va. (Durham-Orange Co.)
*Daughtridge, A. L.	Rocky Mount
Daugherty, J. E.	Brooklyn, N. Y. (Forsyth Co.)
*Davenport, C. A.	Hertford
*Davidson, Jno. E. S. (Hon.)	Charlotte
*Davis, F. M.	Canton
Davis, George	Beaufort
Davis, Jas. W.	Statesville
*Davis, J. J.	Marshallberg
Davis, J. M.	Wadesboro
*Davis, R. B.	Greensboro
Davis, Thomas W., O.A.L.R.	Winston-Salem
Davis, W. C.	Summerfield
*Dawson, Walter W.	Grifton
Dawson, W. E.	Hookertown
Deans, A. W.	Battleboro
DeArmon, J. McC. (Hon.)	Charlotte
*Dees, D. A., O.A.L.R.	Bayboro
*Dees, R. E.	Greensboro
*Dees, Rigdon O.	Greensboro
Denchfield, A. L.	Asheville
*Denson, H. A.	Bennett
Denton, A. L.	Castalia
*Dewar, Wm. B.	Raleigh
Dick, Julius V.	Gibsonville
*Dickie, J. W.	Southern Pines
*Dickinson, E. T.	Greenville

Name	*Address*
Dicks, Jas. Franklin	Stoneville
Dillard G. P.	Draper
Dillard, Richard, Jr. (Hon.)	Edenton
*Dixon, G. G.	Ayden
*Dixon, Guy E.	Hendersonville
Dixon, Hubert C.	Madison
Dixon, Joseph	Greenville
*Dixon, W. H.	Rocky Mount
Dixon, Wm. H.	Kinston
Donnelly, J.	Charlotte
Dosher, R. Arthur	Southport
Drafts, Andrew B.	Hendersonville
Duffy, Leinster	New Bern
Duffy, R. N.	New Bern
Duguid, James	Dover
Duncan, Amos C.	Forest City
Duncan, Julian E.	N. Wilkesboro
Duncan, S. A.	Coats
Dunlap, L. V.	Albemarle
*Dunn, Wm. L.	Asheville
Dyer, John W.	High Point
Eagle, J. C.	Spencer
Eagles, Chas. S.	Saratoga
Easley, P. S.	Statesville
Eckel, O. F.	Asheville
Eddleman, Hall M.	Gastonia
Edgerton, Jas. L. (Hon.)	Hendersonville
Edwards, A. D.	Winston-Salem
Edwards, B. O.	Asheville
Edwards, C. J.	Raleigh
Edwards, C. P.	Asheville
Edwards, F. D.	Toluca
Edwards, G. C.	Hookerton
*Edwards, J. D. (Hon.)	Siler City
Edwards, V. E.	Greensboro
*Elias, Lewis W.	Asheville
Ellen, C. J.	Greenville
Eller, Albert J.	Readybranch
*Ellington, A. J., O.A.L.R.	Burlington
Ellington, J. H.	Sandy Ridge
Elliott, A. H.	Wilmington
Elliott, G. D.	Fair Bluff
Elliott, J. A.	Charlotte
*Elliott, W. F., O.A.L.R.	Lincolnton
Ellis, F. A.	Salisbury
Ellis, R. C. (Hon.)	Shelby
English, Edwin S.	Brevard
Erwin, Evan A.	Laurinburg
Evans, J. E.	Wilmington
Evans, L. B.	Windsor
Evans, W. E.	Rowland
Everett, A. C.	Rockingham
Ezzell, S. H.	Waxhaw
Fairchilds, J. M.	Celo
*Faison, Yates W.	Charlotte
Farrington, R. K.	Thomasville
Farrior, J. W.	Warsaw
*Farthing, L. E.	Wilmington
*Fassett, Burton W., O.A.L.R.	Durham
*Fearing, Isaiah	Elizabeth City
Fearing, Zenas, Jr.	Elizabeth City
Fearrington, Jos. P.	Winston-Salem
*Felts, Robt. L.	Durham
*Fenner, Edwin F.	Henderson
Ferebee, C. G.	Morehead City
*Ferguson, R. T.	Charlotte
Ferneyhough, W. L.	Greensboro
*Fetzer, P. W.	Madison
Fields, R. M.	Goldston
*Finch, O. E.	Raleigh
*Fitzgerald, J. H., O.A.L.R.	Smithfield
Flagge, Philip W.	Jamestown
Fleetwood, Joe A.	Conway
*Fleming, M. I.	Rocky Mount
Fleming, W. L.	Enfield
Flemming, G. M.	Cleveland
Flippin, J. M.	Hickory
Flippin, Samuel T. (Hon.)	Siloam
Flowe, R. Frank	Kannapolis
Flowers, Clarence A.	Wendell
Flowers, C. E.	Zebulon
*Flowers, G. E.	Hickory
Floyd, H. F.	Oteen
Floyd, L. D.	Cerro Gordo
Flynt, S. S.	Rural Hall
Foard, F. T.	Hickory
Foley, C. E.	Raleigh
Folsom, T. W.	Asheville
*Ford, D. E.	New Bern
Formyduval, T.	Bolton
Fortune, Alex. F.	Greensboro
*Foster, H. H.	Norlina
*Foster, J. F.	Sanford
Fouts, J. H.	Franklin
Fowler, M. L.	Zebulon
*Fox, N. A.	Guilford College

Name	*Address*
Francis, Wm. G.	Waynesville
Frazer, H. Thompson	Asheville
Frazier, J. W.	Badin
Freeman, J. D., O.A.L.R.	Wilmington
Freeman, R. H.	Raleigh
Fresh, W. M.	Hickory
*Frizzelle, M. T.	Ayden
*Frye, Glenn R.	Hickory
Furman, Wm. H.	Henderson
Futrell, L. M.	Murfreesboro
*Futrell, W. E.	Greenville
Gage, L. G.	Charlotte
Gainey, John W.	Fayetteville
Gallant, Robt. M.	Charlotte
Galloway, W. C. (Hon.) O.A.L.R.	Wilmington
Gambill, I. S.	Elkin
Gamble, J. F.	Lincolnton
*Gamble, J. R.	Lincolnton
Gambrell, Grover C.	Lexington
Garren, R. H., O.A.L.R.	Monroe
Garrenton, Cecil	Bethel
*Garrett, F. B.	Rockingham
*Garrett, F. J.	Rockingham
*Garrison, D. A.	Gastonia
Garriss, F. H.	Lewiston
Garvey, R. R.	Elkin
Gary, R. H.	Murfreesboro
Gaskins, Lewis R.	Albemarle
*Gaul, Jno. Stuart	Charlotte
Gaw, L. B.	Greensboro
*Geddie, K. B.	Raeford
*Gentry, Geo. W.	Roxboro
George, John C.	Asheville
Gibbon, James	Charlotte
Gibbon, Robert L. (Hon.)	Charlotte
Gibbs, E. W.	Shelby
Gibbs, J. B.	Burnsville
Gibbs, N. M.	New Bern
Gibson, John S.	Gibson
*Gibson, M. R., O.A.L.R.	Raleigh
Gill, Robert J.	Henderson
Gilmore, C. M.	Greensboro
Gilmore, W. D.	Fort Wayne, Ind. (Iredell-Alexander Co.)
Glenn, Henry F.	Gastonia
*Glenn, Lucius N.	Gastonia
Godwin, G. C.	Oteen
*Gold, Ben	Shelby
Gold, Chas. F.	Ellenboro
Gold, T. B.	Shelby
*Goley, Willard Coe	Graham
*Goley, Wm. Rankin (Hon.)	Graham
*Goley, Wm. R.	Shallotte
*Goode, T. V.	Statesville
*Goodman, A. B.	Lenoir
Goodwin, A. W. (Hon.)	Raleigh
*Goodwin, O. S.	Apex
Gorham, H. J.	Nashville
Goudelock, Jno. J.	Monroe
Goudge, Mabel E.	West Durham
Gouge, A. E.	Bakersville
Gouger, Geo. J.	Concord
Gove, Anna M. (Hon.)	Greensboro
*Grady, Jas. C. (Hon.)	Kenly
Grady, Leland V.	Wilson, Rt. 2
Grady, Wm. Earle	Tryon
Graham, Benj. R.	Wilmington
*Graham, Joseph	Durham
Graham, Wm. A. (Hon.)	Charlotte
Grantham, Wm. L.	Asheville
Gray, Eugene P.	Winston-Salem
*Grayson, C. S.	High Point
Green, J. C.	Greenville
*Green, Thos. M.	Wilmington
*Green, Wm. W.	Tarboro
Greene, Jos. B., O.A.L.R.	Asheville
Greenwood, A. B.	Asheville
Greenwood, S. E.	Fletcher
Grier, Chas. T.	Carthage
Griffin, M. A.	Asheville
Griffin, Thos. A.	Greensboro
*Griffin, W. R.	Asheville
*Griffith, F. W.	Asheville
Griffith, L. M., O.A.L.R.	Asheville
Griggs, John B.	Elizabeth City
Griggs, W. T.	Poplar Branch
*Grimes, W. L.	Winston-Salem
Groome, J. G.	High Point
Groves, R. B.	Lowell
Gwyn, H. L.	Yanceyville
Gyles, Roland C.	Siler City
*Hackney, Ben H.	Lucama
Hagaman, J. B.	Todd
Hahn, Milton	Asheville
*Halford, Jos. W.	Lillington
Hall, James S.	Wilmington
*Hall, J. Clegg	Albemarle

Name	*Address*
Halsey, Benj. F. (Hon.)	Roper
*Hamilton, John H.	Wilmington
Hammond, A. F.	Pollocksville
Hamrick, J. Y., Jr.	Boiling Springs
Hamrick, T. G.	Shelby
*Hand, Edgar H.	Charlotte
Hanes, F. M.	Winston-Salem
*Hanes, J. L.	Pine Hall
*Harbison, J. W.	Shelby
*Hardee, Parrott R.	Stem
*Hardee, W. P.	Durham
*Harden, Graham	Burlington
Harden, R. N.	Greensboro
*Hardin, E. R.	Lumberton
Hardin, R. H.	Banner Elk
Harding, S. A.	Mocksville
Hardy, Ira M., O.A.L.R.	Kinston
*Harper, J. H.	Snow Hill
Harrell, Geo. N.	Murfreesboro
Harrell, S. N.	Tarboro
Harrill, L. B.	Caroleen
Harris, Arthur G.	Fairfield
*Harris, F. R. (Hon.)	Henderson
Harris, W. F.	Troy
Harrison, Edmund	Greensboro
Harrison, H. H.	Asheville
Harriss, Andrew H. (Hon.)	Wilmington
Hart, Jno. E.	Wadesboro
*Hart, V. K.	Statesville
Hartsell, F. E.	Oakboro
Harvey, W. W.	Greensboro
Hatcher, M. A.	Hamlet
Hathcock, Thos. A.	Norwood
Hayes, R. B.	Hillsboro
Hays, A. H.	Fairmont
Hays, B. K. (Hon.)	Oxford (Granville Co.)
Haywood, Hubert (Hon.)	Raleigh
*Haywood, Hubert B., Jr.,	Raleigh
*Hayworth, C. A.	Asheboro
Head, W. T.	Campobello, S. C., Rt. 4 (Rutherford Co.)
*Hedrick, C. R.	Lenoir
*Hege, J. Roy	Winston-Salem
Heilig, Herman G.	Salisbury
Helms, T. L.	Randleman
Helsabeck, C. J.	Walnut Cove
Helsabeck, R. S.	Mizpah
Hemmingway, J. D.	Bethel
Henderson, C. C.	Mount Olive
Henderson, Jno. P.	Jacksonville
Henderson, R. B.	Franklinton
Henderson, S. McD.	Charlotte
*Henderson, T. B., O.A.L.R.	Goldsboro
*Henry, T. B.	Rockingham
Hensley, Chas A.	Asheville
Herbert, Fred L.	Andrews
Herbert, Wm. P.	Asheville
Herman, Chas. B.	Statesville
Herring, Benj. S.	Wilson
*Herring, R. A.	Greensboro
*Hester, Jos. R.	Knightdale
Hiatt, H. B.	High Point
Hickman, M. T.	Hudson
*Hicks, Calvin S.	Durham
Hicks, I. F.	Dunn
Hicks, Romeo	Henrietta
*Hicks, V. M., Oph.	Raleigh
*Higgins, L. M.	Salisbury
*Highsmith, J. D.	Fayetteville
*Highsmith, J. F. (Hon.)	Fayetteville
Highsmith, Seavy	Fayetteville
Hill, J. N.	Murphy
Hill, W. Lee	Lexington, Rt. 4
*Hill, Wm. I.	Albemarle
Hines, E. R.	Rocky Mount
Hinnant, Milford	Micro
Hipp, Edw. R.	Charlotte
Hipps, A. G. T.	Asheville
Hobgood, J. E.	Thomasville
Hocutt, Battle A.	Clayton
Hodge, A. R.	Severn
Hodges, Jos. M.	Boone
Hodgin, H. H.	Red Springs
*Hoggard, J. T.	Wilmington
Hoggard, Wm. A.	Hertford, Rt. 3
Holden, E. C.	High Point
Hollingsworth, E. M.	Mount Airy
Hollingsworth, E. T.	Clinton
Hollingsworth, Robt. E.	Mount Airy
*Holloway, O. W.	Durham
*Holloway, Robt. L.	W. Durham
Hollyday, W. M., O.A.L.R.	Asheville
*Holmes, A. B.	Fairmont
*Holt, D. W.	Greensboro
Holt, T. J.	Warrenton
*Holt, Wm. P.	Erwin

Name	*Address*
*Holt, Wm. P., Jr.,	Erwin
Holt, Wm. T.	McLeansville
Holton, Thos. J.	Charlotte
Honnett, Joseph H.	Wilmington
Hood, J. Sidney	Gastonia
*Hooker, John S.	Farmville
*Hooks, Thel	Smithfield
Hooper, D. D.	Sylva
Hooper, Jos. W.	Wilmington
Hoover, C. H.	Crouse
Hoover, H. R.	Wilson
Hord, J. G.	Kings Mountain
Horsley, H. T.	Franklin
Horton, M. C., O.A.L.R.	Raleigh
*Horton, W. C.	Raleigh
Houck, Albert F. (Hon.)	Lenoir
Houser, E. A.	Shelby
Houser, O. J.	Charlotte
Houser, W. H.	Cherryville
Hovis, L. W., O.A.L.R.	Charlotte
Howard, C. E.	Goldsboro
Howard, J. R.	Concord
Howe, Wm. B. W., Jr.	Hendersonville
Howell, W. L.	Ellerbe
Hoyle, Hughes B.	Manteo
Hubbard, Chas. C.	Farmer
*Hubbard, Fred C.	North Wilkesboro (Member Iredell-Alexander)
*Hudson, C. C.	Greensboro
Huffines, T. R.	Asheville
Hunsucker, Chas. R.	Hickory
Hunt, J. F.	Spindale
Hunt, W. Bryce	Lexington
Hunter, J. V.	Asheboro
Hunter, L. W. (Hon.)	Charlotte, Rt.1
*Hunter, Myers	Charlotte
Hunter, W. B.	Cramerton
Hurdle, S. W.	Winston-Salem
*Huston, Jno. W.	Asheville
Hutchins, E. M.	North Wilkesboro
Hutchinson, S. S.	Bladenboro
Hyatt, A. L.	Kinston
Hyde, Francis E.	Beaufort
Ingram, Chas. B. (Hon.)	Mt. Gilead
Irwin, Hamner C.	Pocatella, Idaho (Mecklenburg Co.)
Irwin, Henderson	Goldsboro
Irwin, J. R. (Hon.)	Charlotte
Ivey, H. B.	Goldsboro
Ivey, R. R., U.S.P.H.S.	Biltmore
Izlar, H. L.	Winston-Salem
Jackson, C. C.	Yeatsville
Jacocks, W. P.	New York City (Lincoln County)
James, Albert W.	Hamlet
James, F. P.	Laurinburg
*James, W. D.	Hamlet
Jarboe, Parran	Greensboro
Jenkins, Chas. L. (Hon.)	Raleigh
Jennings, C. W., O.A.L.R.	Greensboro
*Jennings, R. G.	Thomasville
Jerome, J. R.	Oakboro
Jervey, A. J.	Tryon
Jett, Samuel G.	Reidsville
Jewett, R. D. (Hon.) O.A.L.R.	Wilmington
John, Peter	Laurinburg
Johnson, B. C.	Bunn
*Johnson, Floyd	Whiteville
*Johnson, Geo. W.	Wilmington
*Johnson, Harry H.	Louisburg
Johnson, Harry L.	Greensboro
Johnson, John B.	Old Fort
Johnson, N. M. (Hon.)	Durham
Johnson, R. Lee	Gastonia
*Johnson, Thos. C.	Lumberton
Johnson, W. A.	Reidsville, R. F. D.
Johnson, W. C.	Canton
*Johnson, W. M.	Winston-Salem
*Johnston, J. G., O.A.L.R.	Charlotte
Johnston, W. W.	Manteo
Joiner, C. C.	Farmville
Jonas, John F.	Marion
Jones, A. G. (Hon.)	Walnut Cove
*Jones, Arthur O.	Greensboro
Jones, Beverly N., O.A.L.R.	Winston-Salem
Jones, R. Duval	New Bern
Jones, R. Rives	Winston-Salem
Jones, Thomas J.	Lansing
Jones, T. Lester	Lansing
*Jones, Wm. M.	Greensboro
Jordan, Chas. S.	Asheville
*Jordan, T. M. (Hon.)	Raleigh
Jordan, Wm. S., O.A.L.R.	Fayetteville
*Judd, Eugene C.	Raleigh
*Judd, James M.	Varina

Name	*Address*
*Julian, Chas. A. (Hon.)	Greensboro
Jurney, Peter Claywell	Turnersburg
Justice, Gaston B.	Marion
Kafer, Oswald O.	Edward
Kapp, Henry H.	Winston-Salem
*Keiger, Jas. A.	Greensboro
Keiger, O. R.	Winston-Salem
Keith, Marion Y.	Greensboro
Kelly, Luther W.	Charlotte
*Kendrick, R. L.	Elizabeth City
Kennedy, John P.	Charlotte
*Kent, Alfred A. (Hon.)	Winter Park Fla. (Caldwell Co.)
Kernodle, Chas E.	Elon College
*Kerns, T. C., O. A. L. R.	Durham
*Kerr, Jas. E.	Winston-Salem
*Kerr, John D.	Clinton
Ketchie, J. M.	Salisbury
Kibler, W. H.	Morganton
Killian, P. B.	Hayesville
Kimberly, David Jr.,	Asheville
King, Edward	Asheville
King, Parks M.	Charlotte
King, Richard M.	Concord
Kinlaw, W. B.	Rocky Mount
Kinsman, Henry F.	Hamlet
Kirk, W. R.	Hendersonville
Kirkpatrick, W. L.	Waynesville
Kirksey, James J.	Morganton
Kirksey, W. A.	Hope Mills
*Kitchin, Thurman D.	Wake Forest
Klutz, A. F.	Maiden
Klutz, P. J.	Maiden
*Knight, Floyd L.	Sanford
*Knight, Wm. P. (Hon.)	Greensboro
*Knowles, D. L.	Rocky Mount
Knox, A. W. (Hon.)	Raleigh
Knox, John Jr.,	Lumberton
Koonce, S. Everett, O.A.L.R.	Wilmington
*Kornegay, Lemuel W.	Rocky Mount
Kutscher, G. W., Jr.,	Swannanoa
Lackey, F. H.	Fallston
Lackey, M. A., O.A.L.R.	Moorsville
Lafferty, Robt. H.	Charlotte
*Lambert, C. F.	Spruce Pine
Lambert, W. L.	Asheboro
Lamm, Isaac W.	Lucama
Lancaster, F. J.	Lexington
Landen, J. F.	Chinquapin
*Lane, Bessie	Raleigh
*Lane, John L., O.A.L.R.	Rocky Mount
Lane, M. E.	Pinetops
Lane, P. P.	Wilson
Large, H. Lee	Rocky Mount
Larkin, E. W.	Hickory
Lasley, J. M.	Winston-Salem
*Lassiter, C. L.	Fremont
Lassiter, H. G.	Weldon
Latham, Jos. R.	New Bern
*Laton, Jas. F., O.A.L.R.	Albemarle
Lattimore, E. B.	Shelby
*Laughinghouse, Chas. O'H. (Hon.)	Greenville
*Lawrence, B. J.	Raleigh
*Lawrence, Chas. S.	Winston-Salem
*Lawson, R. B.	Chapel Hill
Lea, J. I.	Tryon
Leak, Wharton G.	East Bend
Ledbetter, Jas. McQ., O.A.L.R.	Rockingham
*Lee, J. Marshall	Newton Grove
Lee, Lawrence V.	Lattimore
*Lee, Mike	Kinston
Lee, R. E.	Lincolnton
*Lee, S. E.	Sanitorium
Lee, Thomas L.	Kinston
Leeper, Donald H.	Hiddenite
*Leinbach, Robt. F.	Charlotte
Lentz, C. M.	Albemarle
Lewis, Geo. W. (Hon.)	Wilson
Lewis, H. W. (Hon.)	Jackson
Lewis, S. V.	Greensboro
Lieberman, Capt. John F.	Ft. Bragg
Liles, N. P.	Lilesville
Lilly, Jas. M., O.A.L.R.	Fayetteville
*Linville, A. Y. (Hon.)	Winston-Salem
*Linville, W. C.	Goldsboro
Lister, E. W.	Weeksville
Lister, J. L.	Mount Olive
Little, E. E.	Statesville
Little, Lonnie M.	Statesville
*Livingston, E. A., O.A.L.R.	Gibson
*Lloyd, B. B.	Chapel Hill
Locke, Eva M.	White Rock
*Lockett, Everett A.	Winston-Salem
Logan, F. W. F.	Rutherfordton
Long, Benj. Leroy	Glen Alpine

Name	*Address*
Long, Edgar M.	Hamilton
*Long, E. F.	Hight Point
Long, Fred Y.	Catawba
Long, Glenn	Newton
Long, H. F. (Hon.)	Statesville
Long, R. H.	Morganton
*Long, T. W. M.	Roanoke Rapids
*Long, V. McK.	Winston-Salem
Long, Walter T.	Roxboro
Looney, J. J. W., O.A.L.R.	Rocky Mount
Lord, Marjery J.	Black Mountain
*Love, Bedford E.	Roxboro
Love, Wm. M.	Monroe
Lovelace, Thos. C.	Henrietta
*Lovill, Robt. J.	Mount Airy
*Lowery, Jno. R.	Raleigh
Lowery, Sidney Allen	Kings Mt.
Lubchenko, N. E.	Harrisburg
*Lutterloh, I. Hayden, Jr.	Sanford
Lutterloh, I. H., Sr.	Sanford
Lyday, Abram E.	Penrose
*Lyday, C. E.	Gastonia
Lyday, R. O.	Greensboro
Lyday, Wm. Monroe	Brevard
Lyle, S. H.	Franklin
Lynch, J. M.	Asheville
*Lyon, B. R.	Greensboro
Lyon, Henry Wise	Rocky Mount
*MacConnell, John W., O.A.L.R.	Davidson
*MacFadyen, Paul R.	Concord
*MacNider, Wm. deB.	Chapel Hill
MacPherson, G. S.	Asheville
MacRae, J. D.	Asheville
McAdams, C. R.	Belmont
*McAnally, Wm. J.	High Point
McAndrew, P. H.	Ft. Bragg
*McBrayer, L. B.	Southern Pines
*McBrayer, R.	Shelby
*McBryde, M. H.	Reidsville
*McCain, P. P.	Sanatorium
*McCain, Wm. R.	High Point
McCall, A. C., O.A.L.R.	Asheville
McCanlass, Wm. V.	Danbury
*McCampbell, John	Morganton
McChesney, W. W.	Gastonia
McClees, E. C.	Elm City
McCelland, J. O.	Maxton
McClelland, W. E.	Asheville
McCombs, C. J.	Gastonia
McCotter, St. Elmo	Bayboro
McCracken, C. M.	Fairview
*McCracken, J. R., O.A.L.R.	Waynesville
*McCreary, A. B.	Rockingham
McCuiston, A. M.	Kinston
*McCutcheon, W. B.	Durham
McDade, B. B.	Corbett, Rt. 1
*McDaniel, L. E.	Jackson
McDonald, A. A.	Jackson Springs
McDowell, F. C.	Zebulon
McDuffie, W. N.	Hemp
McElwee, Ross S.	Statesville
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McGehee, Jno. Wm.	Reidsville
McGoogan, Benj. J.	McFarlan
*McGougan, J. V.	Fayetteville
McGowan, Claudius	Plymouth
McIntosh, W. R.	Rockingham
McKay, H. W.	Charlotte
*McKay, Jos. F.	Buies Creek
McKay, W. P.	Fayetteville
McKee, John S.	Raleigh
McKenzie, B. W.	Salisbury
*McKenzie, Wm. W. (Hon.)	Salisbury
McLaughlin, C. S.	Charlotte
McLaughlin, J. E. (Hon.)	Statesville
McLean, Allen	Wagram
McLean, I. N.	Burnsville
McLean, John W.	Godwin
McLean, Peter	Laurinburg
*McLelland, W. D.	Mooresville
McLemore, Geo. A.	Smithfield
McLeod, A. H.	Aberdeen
McLeod, W. G.	Southern Pines
McManus, W. L.	Greensboro
*McMillan, B. F. (Hon.)	Red Springs
McMillan, E. G.	Maxton
McMillan, J. M.	Candor
McMillan, R. D.	Red Springs
McMillan, W. D. (Hon.)	Wilmington
McNairy, Caroline	Lenoir
McNairy, C. Banks	Lenoir
McNeill, Jas. H.	North Wilkesboro

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*McNeill, Jas. W. (Hon.)	Fayetteville
*McPhail, L. D.	Charlotte
*McPhaul, W. A.	Charlotte
*McPherson, C. W., O.A.L.R.	Burlington
McPherson, R. G.	Saxapahaw
*McPherson, S. D., O.A.L.R.	Durham
*Macon, G. H.	Warrenton
Mahoney, A. F.	Monroe
Malcolm, Capt. Robt.	Fort Bragg
Mallett, E. P.	Hendersonville
Malone, J. Y., O.A.L.R.	Asheville
Malloy, S. A.	Yanceyville
Maness, J. M., O.A.L.R.	Ellerbe
*Mangum, C. P.	Kinston
Mangum, C. S.	Chapel Hill
*Mann, I. Thurman	High Point
*Manning, I. H.	Chapel Hill
Manning, John M. (Hon.)	Durham
Mariner, N. B.	Belhaven
*Markham, Blackwell	Durham
Marlowe, W. H.	Wilson
Marr, M. W.	Pinehurst
Marsh, Frank B.	Salisbury
*Martin, J. A.	Lumberton
*Martin, J. F.	Dunn
Martin, J. H.	Red Oak
Martin, J. W.	Roanoke Rapids
Martin, Lester P.	Mocksville
Martin, Moir S.	Mt. Airy
Martin, Sydnor L.	Leaksville
Martin, W. G., O.A.L.R.	Mocksville
Martin, Wm. F.	Charlotte
Martin, W. J.	Davidson
Mason, Manly	Newport
*Matheson, Jas. P., O.A.L.R.	Charlotte
Mathews, Vann M.	Charlotte
Matthews, Jas. O.	Clinton, R. F. D.
*Matthews, M. L.	Sanford
*Matthews, Wm. W.	Spray
Maxwell, C. S.	Beaufort
Maxwell, H. B.	Whiteville
Maxwell, J. F.	Pink Hill
Mayerberg, I. W.	Selma
Meadows, W. J.	Greensboro
Mears, George A.	Asheville
Mebane, W. C.	Wilmington
*Melvin, W. C.	Linden
Menzies, H. H.	Hickory
Meriwether, B. M.	Asheville
*Merritt, John H.	Woodsdale, R. 1
Michaux, Edward R.	Greensboro
Miles, May S.	Greensboro
*Millander, C. W.	Asheville
Miller, J. F.	Marion
Miller, Oscar L.	Gastonia
Miller, R. C.	Gastonia
Miller, Robert B.	Goldsboro
*Milliken, J. S.	Southern Pines
*Mimms, C. W.	Winston-Salem
Minor, Charles L. (Hon.)	Asheville
*Misenheimer, C. A. (Hon.)	Charlotte
*Misenheimer, Thos. M.	Charlotte
Mitchell, Geo. W.	Wilson
Mitchell, Jesse H.	Ahoskie
Mitchell, Paul H.	Ahoskie
*Mitchell, R. C.	Mt. Airy
Mitchell, Thos. B.	Lincolnton
Mitchell, W. F.	Shelby
*Mitchell, Z. P.	Weldon
*Mitchener, J. S., O.A.L.R.	Raleigh
*Mock, Frank L.	Lexington, R. 3
Monk, Henry L.	Salisbury
*Monroe, J. P.	Sanford
*Montague, S. J.	Durham
*Montgomery, Harry M.	Burlington
Montgomery, John C. (Hon.)	Charlotte
Montgomery, Kenneth E.	Asheville
Moore, Alexander W.	Charlotte
*Moore, Chas. E. (Hon.)	Wilson
*Moore, D. B.	Mt. Holly
Moore, D. B.	Badin
Moore, D. F.	Shelby
Moore, Edwin G. (Hon.)	Elm City
Moore, Henry B.	Graham
Moore, Julian A.	Wilmington
Moore, Oren	Charlotte
Moore, R. A.	Charlotte
*Moore, R. A.	Winston-Salem
Moore, T. V.	Acme
Moore, W. Houston	Wilmington
Moore, Wm. James	Ashboro
Morgan, B. E.	Asheville
Morgan, C. H.	Higgins
*Morgan, G. A.	Asheville
*Morrill, D. S.	Farmville
Morrill, Jenness	Falkland

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Morris, Carlyle	Maxton
Morris, G. Dillon	Goldsboro
Morris, Geo. B.	Goldsboro
Morris, Jos. A.	Oxford
Morrow, Wm. C.	Andrews
Morton, J. X.	Faison
Moseley, Chas. W. (Hon.)	Greensboro
Moser, W. D.	Burlington
Motley, Fred Elliott	Charlotte
*Mudgett, W. C.	Southern Pines
Munroe, H. Stokes	Charlotte
*Munroe, J. P. (Hon.)	Charlotte
Munt, H. F.	Winston-Salem
Murchison, D. R.	Wilmington
Murphy, D. P.	Rutherfordton
Murphy, Gibbons W.	Asheville
*Murphy, John G., O.A.L.R.	Wilmington
*Murphy, W. B.	Snow Hill
Murray, R. L.	Raeford
*Myers, Alonzo	Charlotte
*Myers, John Q.	Charlotte
Myers, R. W.	Fullers, Rt. 1
*Nalle, B. C.	Charlotte
Nance, C. L.	Charlotte
*Nash, J. Fred	St. Paul
Neal, John W.	Monroe
*Neal, Kemp P.	Raleigh
Neal, Paul N.	Raleigh
Nelson, R. J. (Hon.)	Robersonville
*Nesbitt, Charles T.	Wilmington
Newbern, J. M.	Jarvisburg
*Newby, G. E.	Hertford
Newcombe, A. P., Jr.	Henderson
*Newell, H. A., O.A.L.R.	Henderson
Newell, J. O.	Louisburg
*Newell, Leone B.	Charlotte
Newman, Harold H.	Salisbury
Newman, L. B.	Franklin
Newton, Howard L.	Charlotte
Nichols, Alvin A.	Sylva
Nichols, Asbury S.	Sylva
*Nichols, Austin F.	Roxboro
*Nichols, Rhodes E.	Durham, Rt. 8
*Nicholson, B. M.	Enfield
Nicholson, C. R.	Statesville
Nicholson, N. G.	Mt. Gilead
*Nicholson, J. L.	Washington
Nicholson, P. A. (Hon.)	Washington
Nicholson, S. T. (Hon.)	Washington
Nisbet, Walter O.	Charlotte
Nisbet, Yates H.	Charlotte
*Noble, R. J. (Hon.)	Selma
*Noble, R. P.	Raleigh
Nobles, Jos. E.	Greenville
*Noblin, Roy L.	Oxford
Noell, R. H.	Rocky Mount
Nolan, J. V.	Kannapolis
Norburn, C. S.	Asheville
Norburn, R. L.	Asheville
Norfleet, A. C.	Tarboro
Norfleet, E. P.	Roxobel
Norfleet, L. E., O.A.L.R.	Tarboro
Norman, J. S.	Columbia
Norris, Henry	Rutherfordton
*Northington, J. M.	Charlotte
*Nowell, S. C.	Hickory
Oates, George	Grover
O'Briant, A. L.	Cameron
*Ogburn, H. H.	Greensboro
Ogilvie, Hanson S.	Asheville
Olive, P. W.	Fayetteville
Oliver, A. S.	Benson
*Orr, Chas. C.	Asheville
Orr, P. B.	Asheville
*Orr, W. J. B.	Smithfield
Owen, J. F.	Raleigh
Ownbey, Arthur D.	Greensboro
Pace, K. B.	Greenville
Packard, G. H.	Meredith, N. H. (Madison Co.)
*Paddison, J. R.	Kernersville
Page, B. W.	Maysville
Palmer, Horace	Littleton
Palmer, M. C.	Tryon
Palmer, R. W.	Gulf
Parker, Clifton G.	Woodland
*Parker, C. P.	Seaboard
Parker, G. E.	Benson
Parker, Geo. F.	Asheville
Parker, H. R.	Greensboro
*Parker, John Rainey	Burlington
Parker, O. L.	Clinton
Parker, Paul G.	Erwin
Parker, S. F.	Mount Olive
Parker, Walter R.	Woodland
Parks, W. B.	Gastonia
*Parrott, Albert DeK.	Kinston

Name	*Address*
*Parrott, Jas. M. (Hon.) O.A.L.R.	Kinston
*Parrott, M. C.	Kinston
Parrott, Wm. T.	Kinston
*Parsons, W. H.	Ellerbe
*Pate, Jas. F., O.A.L.R.	Greensboro
Pate, Jas. G.	Gibson
Patman, W. L.	Greensboro
Patrick, Geo. R., Jr.,	Bessemer City
*Patrick, J. E.	Bahama
Patrick, L. N., O.A.L.R.	Gastonia
Patterson, Jno. A., O.A.L.R.	Concord
Patterson, Jos. F.	New Bern
Patterson, Reid	Charlotte
Patton, A. B.	Hendersonville
Payne, J. W.	E. Flat Rock
Payne, R. L.	Monroe
Pearson, Raymond	Monroe
Peck, Edward J.	Hot Springs
Peek, W. A.	Ramsaytown
Peeler, Clarence N., O.A.L.R.	Charlotte
Peeler, John H.	Salisbury
Peery, Vance P.	Kinston
*Peete, C. H.	Warrenton
Pegram, R. W. S.	Canton
Pemberton, Wm. D. (Hon.)	Concord
Pendleton, Wilson	Asheville
*Pepper, Jno. Kerr	Winston-Salem
Perkins, David R.	Marshville
Perkins, Jno. R., O.A.L.R.	Winston-Salem
Perry, A. H.	Wood
*Perry, D. R.	Durham
*Perry, E. M.	Rocky Mount
Perry, H. B.	Valle Crucis
*Perry, H. G.	Louisburg
Person, Edgar C., O.A.L.R.	Pikeville
Person, H. M.	Goldsboro
Person, J. B.	Selma
Person, T. E.	Stantonsburg
Peters, W. A.	Elizabeth City
*Peterson, C. A.	Spruce Pine
Peterson, J. M.	Spruce Pine
Peterson, W. C.	Wilmington
*Petrie, Rbt. Wm., O.A.L.R.	Lenoir
Petteway, Geo. H.	Charlotte
Pfohl, Samuel F. (Hon.)	Winston-Salem
Phifer, Edward M.	Morganton
Phillips, C. C.	Charlotte
*Phillips, C. H.	Thomasville
*Phillips, J. W.	Liberty
*Pickett, John A.,	Burlington, R.F.D.1
Pittman, E. E.	Oak City
Pittman, M. A.	Wilson
*Pittman, R. L.	Fayetteville
Pitts, W. I.	Lenoir
Plyler, R. J.	Salisbury
Pollard, W. B.	Winton
Pollock, Raymond	New Bern
Pool, B. B.	Winston-Salem
Poole, C. G.	Winston-Salem
Pope, Henry T.	Lumberton
Post, J. J.	Greensboro
Poston, J. Lewis	Statesville
*Powell, Albert H.	Durham
Powell, H. H.	Stantonsburg
Powell, Jesse A.	Edenton
Powers, J. F.	Newland
Pressly, Geo. W. (Hon.)	Charlotte
Primrose, R. S.	New Bern
*Pritchard, A. T.	Asheville
Pritchard, G. L.	Black Mountain
Pritchard, Jno. L.	Windsor
Proffit, Thos. J.	Elk Park
*Proctor, I. M.	Raleigh
Pruitt, G. C.	Monroe
Pugh, Chas. H.	Gastonia
*Purdy, J. J.	Oriental
*Putney, R. H.	Elm City
Query, Richard Z.	Charlotte
*Quickel, Thos. C., O.A.L.R.	Gastonia
Quillen, Emile B., O.A.L.R.	Rocky Mount
*Quinn, Robert F.	Magnolia
*Raby, J. G.	Tarboro
*Rainey, W. T.	Fayetteville
Ramsey, James G.	Salisbury
Rankin, P. R.	Mount Gilead
Rankin, R. B.	Kannapolis
Rankin, S. W.	Concord
*Rankin, Watson S.	Charlotte
*Ranson, J. Lester	Charlotte
*Ravenel, S. F.	Greensboro
Ray, F. L.	Charlotte
*Ray, John B.	Leaksville
Ray, O. L.	Raleigh, Rt. 1

Name	*Address*
Ray, R. C.	Beaver Creek
*Reaves, C. R., O.A.L.R.	Greensboro
*Reaves, W. P., O.A.L.R.	Greensboro
Redding, Alex H.	Cedar Falls
Redfern, T. C.	Winston-Salem
Reed, D. H.	Kenansville
Reed, John F.	Concord
Reeves, A. F.	Asheville
Reeves, B. E.	W. Jefferson
Reeves, R. J.	Leicester
*Register, F. M.	Raleigh
Reid, Geo. P.	Forest City
Reid, James W.	Lowell
*Reitzel, C. E.	High Point
*Reynolds, C. V. (Hon.)	Asheville
*Reynolds, T. F.	Canton
Rhodes, James S.	Williamston
Rhudy, Booker E.	Greensboro
*Rhyne, Robt. E.	Gastonia
Rhyne, S. A.	Statesville
Richardson, Jas. C.	Monroe
Richardson, F. H.	Black Mountain
Ricks, Leonard E.	Fairmont
Riddle, J. B.	Morganton
*Rigsbee, A. E.	Durham
Ring, Joseph W.	Elkin
Ringer, Paul H.	Asheville
*Roberson, Charles	Greensboro
*Roberson, Foy	Durham
Roberts, Bryan Nazer	Boardman
Roberts, B. W.	Durham
Roberts, Frank	Marshall
*Robertson, James F.	Wilmington
Robertson, J. N.	Fayetteville
Robertson, W. Burdette	Burnsville
*Robinson, J. D.	Wallace
Robinson, W. F.	Mars Hill
Robinson, W. J.	Creston
*Rodgers, W. D.	Warrenton
Rodman, J. C. (Hon.)	Washington
Rodwell, Jno. W.	Mocksville
Rodgers, Jas. Rufus	Raleigh
Rogers, W. A.	Franklin
Root, Aldert S.	Raleigh
Rose, A. H.	Smithfield
Rose, David J.	Goldsboro
Ross, George Floyd	Asheville
*Ross, Geo. H.	East Durham
Ross, Otho B.	Charlotte
*Ross, Robert A.	Durham
Rosser, R. G.	Vass
Rousseau, J. P.	Winston-Salem
*Royal, Ben F.	Morehead City
Royall, M. A.	Elkin
Royster, Hubert H. (Hon.)	Raleigh
Royster, S. S.	Shelby
Royster, Thos. H.	Tarboro
*Royster, Thos. S.	Henderson
Royster, W. I. (Hon.)	Raleigh
Rozier, R. G.	St. Pauls
Rucker, A. A.	Rutherfordton
Rudisill, J. D.	Lenoir
Ruffin, J. B.	Powellsville
*Russell, C. R.	Granite Falls
Russell, Jesse M.	Canton
Russell, Lloyd P.	Fletchers
Sabiston, Frank, O.A.L.R.	Kinston
Sadler, R. C.	Whiteville
*Saliba, John	Elizabeth City
Saliba, M. M., O.A.L.R.	Wilson
Salley, E. McQueen	Saluda
Salmons, H. C.	Elkin
Salmons, L. R.	Winston-Salem
Sample, R. C.	Hendersonville
Saunders, Jos. H.	Williamston
Saunders, S. Stewart	High Point
Sawyer, Chas. J. (Hon.) O.A.L.R.	Windsor
Sawyer, W. W., O.A.L.R.	Elizabeth City
Scales, R. B.	Salisbury
Schaffle, Karl	Asheville
Schallert, P. O.	Winston-Salem
Schaub, O. P., O.A.L.R.	Winston-Salem
Schenk, Sam M.	Shelby
Schoenheit, E. W.	Asheville
Schonwald, J. T. (Hon.)	Wilmington
Schoonover, R. A.	Greensboro
Schuler, J. E.	East Durham
Scott, Charles L.	Sanford
Scott, R. C.	Asheville
Scott, S. F.	Union Ridge
Scott, Thos. G.	High Point
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Scruggs, W. H.	Gastonia
Scruggs, W. Marvin	Charlotte

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Seay, T. W.	East Spencer
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Sevier, D. E.	Asheville
Sevier, J. T.	Asheville
Sexton, C. Hector	Dunn
Shafer, Irving E.	Salisbury
Shamburger, J. B. (Hon.)	Star
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*Sharpe, F. A.	Greensboro
Sharpe, Frank L.	Statesville
*Sharpe, O. L.	Greensboro
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Shaw, J. A.	Fayetteville
*Shaw, W. G.	Wagram
Shellum, O. W.	Denver
Sherrill, C. L.	Statesville
Sherrill, H. R.	Lawndale
Shields, Henry B.	Carthage
Shirley, H. C., O.A.L.R.	Charlotte
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Shore, Clarence A.	Raleigh
Shreve, J. R.	Brown Summit
Shuford, Jacob H.	Hickory
*Shull, J. Rush	Charlotte
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Sigman, F. C.	Spencer
*Sikes, G. L.	Salemburg
*Sikes, G. T. (Hon.)	Creedmoor
*Simmons, L. L., O.A.L.R.	Greensboro
*Simmons, R. R.	Winston-Salem
Simpson, H. H.	Altamahaw
Singletary, G. C.	Clarkton
Sink, C. S.	N. Wilkesboro
*Sisk, C. N.	Raleigh
Skinner, Louis C.	Greenville
*Slate, John S.	Winston-Salem
Slate, J. W.	High Point
Slate, Wesley C.	Spencer
*Sloan, D. B., O.A.L.R.	Wilmington
*Sloan, H. L., Oph.	Charlotte
Sloan, Wm. H.	Garland
Slocum, R. B.	Wilmington
Sloop, Eustace H.	Crossnore
*Small, Victor R.	Clinton
Smith, A. Jones	Black Creek
*Smith, Annie T.	Durham
Smith, B. R.	Asheville
*Smith, C. T.	Rocky Mount
Smith, D. L.	Saluda
*Smith, F. C., O.A.L.R.	Durham
Smith, G. M.	Monroe
*Smith, J. A.	Lexington
*Smith, James B. (Hon.), Pilot M't'n.	
Smith, John McN.	Rowland
Smith, Joseph	Greenville
*Smith, Jos. E.	Windsor
*Smith, L. J.	Wilson
*Smith, O. F.	Scotland Neck
Smith, Owen	High Point
Smith, R. A. (Hon.)	Goldsboro
Smith, R. C.	Grifton
*Smith, R. E.	Winston-Salem
Smith, Robt. W.	Hertford
Smith, Slade A.	Wilmington
Smith, W. F.	Chadbourn
*Smith, Wm. H.	Goldsboro
Smithwick, Jas. E.	Jamesville
Smoot, J. E.	Concord
Snipes, E. P. (Hon.)	Jonesboro
*Soady, J. H.	Garner
*Somers, L. P.	New Castle
Sossoman, J. C.	Midland
Sowers, Jacob L.	Lexington
Sowers, Roy G.	Jonesboro
Spainhour, Ellis H. (Hon.)	Winston-Salem
*Sparrow, Thos. DeL.	Charlotte
Speas, D. C.	Winston-Salem
*Speas, W. P., O.A.L.R.	Hickory
*Speed, J. A.	Durham
Speight, J. A.	Rocky Mount
Speight, John W.	Roper
Speight, J. P.	Rocky Mount
Spencer, Frederick B.	Salisbury
Spencer, Wm. O. (Hon.)	Winston-Salem
Spicer, John	Goldsboro
Spicer, R. W.	Winston-Salem
*Spicer, William	Goldsboro
Spikes, N. O.	Durham
Spoon, A. O.	Greensboro
Spoon, Chas. E.	Burlington
Spoon, S. C.	Graham
Sprinkle, C. N.	Weaverville
*Spruill, Jos. L.	Jamestown
*Sprunt, W. H., Jr.	Winston-Salem
*Squires, Claude B.	Charlotte
Stahlman, Fred C.	Asheville

Name	*Address*
Staley, S. Walter	Rocky Mount
Stamps, Thos. (Hon.)	Lumber Bridge
*Stanford, Lois Foote	Durham
*Stanford, W. R.	Durham
Stanley, John H.	Four Oaks
*Stanton, D. A. (Hon.)	High Point
Stanton, T. M.	High Point
*Starr, H. F.	Greensboro
*Steel, Wm. C.	Mt. Olive
Stephens, W. L.	Shiloh
*Stevens, M. L. (Hon.)	Asheville
Stevens, R. S.	Princeton
Stevens, Samuel A.	Monroe
Stevenson, F. T.	Hickory
Stewart, H. D.	Monroe
Stewart, J. J.	Mt. Holly
Stewart, J. T.	Summerfield
Stillwell, H. T.	Maiden
Stockton, W. I.	Carthage, R. F. D.
Stokes, Jas. E.	Salisbury
Stokes, P. B.	Kings Mountain
Stokes, R. L.	Brevard
Stone, Grady E.	King
Stone, Wesley M.	Dobson
*Stoner, I. J.	West Durham
Straughan, J. W.	Warsaw
Street, C. A.	Winston-Salem
Street, M. E.	Glendon
Strickland, E. F. (Hon.)	Winston-Salem
Strickland, E. L.	Wilson
Strickland, W. M.	Wendell
Stringfellow, Jas. L.	Waynesville
*Stringfield, S. L.	Waynesville
Stringfield, Thomas	Waynesville
*Strong, Chas. M. (Hon.)	Charlotte
Strong, Wm. M.	Charlotte
*Stroesnider, Chas. F.	Goldsboro
Strowd, W. A.	Durham
Sutter, W. G.	Weldon
Summerell, E. M. (Hon.)	China Grove
Summerell, G. H.	Ayden
Summers, Chas. L. (Hon.)	Baltimore, Md. (Forsyth Co.)
Summey, T. J.	Brevard
Sumner, G. H.	Mt. Airy
Sumner, Thos. W.	Fletcher
Sumners, Emmett A.	Randleman
Surles, J. B.	Four Oaks
Sutton, Carl W.	Richlands
Sutton, Wm. G.	Seven Springs
Swann, Jos. F.	Gastonia
*Sweaney, H. M.	Durham
*Sweany, John	Durham
Swindell, C. L.	Wilson
*Swindell, Lewis H.	Washington
Tally, J. S.	Troutman
*Tankersley, J. W.	Greensboro
*Tate, C. S.	Ramseur
Tate, W. C.	Banner Elk
Tatum, Walter Lowe	Salisbury
*Tayloe, D. T. (Hon.)	Washington
*Tayloe, D. T., Jr.,	Washington
*Tayloe, John Cotton	Washington
*Tayloe, Joshua	Washington
Tayloe, Joshua, Jr.	Washington
Taylor, E. H. E.	Morganton
*Taylor, F. R.	High Point
Taylor, G. W.	Mooresville
*Taylor, H. A.	New Bern
Taylor, H. C.	Charlotte (Chadwick Sta.)
Taylor, James N.	Graham
Taylor, James T.	Madison
*Taylor, S. R., O.A.L.R.	Greensboro
Taylor, T. G.	Leaksville
*Taylor, Wesley	Greensboro
*Taylor, W. I.	Burgaw
Taylor, Wm. S.	Mount Airy
Teague, S. E.	Hamlet
*Templeton, James M.	Cary
Templeton, J. Y.	Moorsville
Tennent, G. S., (Hon.) O.A.L.R.	Asheville
Terry, Geo. H. B.	Oteen
Terry, J. R.	Lexington
Terry, P. R.	Asheville
Terry, Wm. Calvin	Hamlet
*Thaxton, B. A.	Roxboro
Thigpen, H. G.	Scotland Neck
Thigpen, Wm. J.	Tarboro
Thomas, J. E.	Waxhaw
Thomas, J. G.	Greensboro
*Thomas, W. Clyde	Siler City
*Thomas, Wm. N.	Oxford
Thompson, A. C.	Asheville

Name	*Address*
Thompson, A. F., O.A.L.R.	Troy
*Thompson, C. D.	High Point
*Thompson, Cyrus	Jacksonville
Thompson, E. S.	Winston-Salem
Thompson, Hugh A.	Raleigh
*Thompson, Joseph W.	Creedmoor
Thompson, Malcolm D.	Greenville
*Thompson, S. R.	Charlotte
Thompson, S. W., Jr.	Morehead City
Thompson, W. A.	Rutherfordton
Thorp, A. T.	Rocky Mount
Thurston, Asa	Taylorsville
Tidwell, J. E.	Andrews
Tilly, John Hill	Charlotte
Tilson, Jacob C.	Marshall
Timberlake, C. V.	Youngsville
Timberlake, R. E.	Youngsville
Todd, L. C.	Charlotte
Toole, A. F.	Asheville
Toy, Calvert R.	Chapel Hill
Trantham, H. T. (Hon.)	Salisbury
Triplett, W. R.	Purlear
*Trivette, W. A.	Hamptonville
Troxler, R. M.	Burlington
Tucker, Jno. H.	Charlotte
Tucker, W. A.	North Wilkesboro
Turner, H. G.	Raleigh
Turner, J. P.	Greensboro
Tuttle, A. F.	Spray
*Tuttle, Reuben G.	Winston-Salem
*Twitty, John C.	Rutherfordton
Tydeman, F. W. L.	Wood River, Ill. (Member Mecklenburg Co.)
Tyler, E. R.	Durham
*Tyner, Carl V.	Leaksville
*Tyson, T. D.	Mebane
Underwood, O. E.	Roseboro
Upchurch, C. G.	Apex
*Upchurch, Robt. T.	Henderson
Upchurch, R. W.	Durham
Utley, H. H.	Benson
*Valk, A. deT.	Winston-Salem
Van Epp, Owen B.	Cashiers
Vann, H. M.	Wake Forest
Vann, J. R., Jr.	Spring Hope
*Van Poole, Carl M., Jr.	China Grove
*Van Poole, C. M. (Hon.)	Salisbury
Vaughan, J. C.	Rich Square
Verdery, W. C.	Fayetteville
Verner, Carl Hugh	Forest City
*Vernon, Jas. W.	Morganton
Vestal, Willis J. (Hon.)	Lexington
Vick, Geo. D.	Selma
Wadsworth, H. B.	New Bern
Wadsworth, Wm. H.	Concord
*Wakefield, Harry A., O.A.L.R.	Charlotte
*Walker, H. D.	Elizabeth City
Walker, J. B.	Gibsonville
Walker, L. A.	Burlington
Walker, L. K.	Ahoskie
*Walker, Walter E., O.A.L.R.	Burlington
Wall, R. L.	Winston-Salem
*Walters, Chas. M.	Burlington
Wannamaker, Edw. J., Jr.	Charlotte
Wanstrom, Ruth	Asheville
Ward, Jesse E.	Robersonville
Ward, I. A.	Elizabeth City
Ward, John LaB.	Asheville
Ward, Vernon A.	Robersonville
Ward, Wm. H. (Hon.) O.A.L.R.	Plymouth
Ward, W. T.	Raleigh
Waring, E. S.	Durham
*Warren, John W.	Edenton
*Warren, R. F.	Prospect Hill
*Warren, R. L.	Dunn
*Warren, Wm. E.	Williamston
Warrick, L. A.	Goldsboro
Washburn, B. E.	Kingston, Jamaica (Wake Co.)
Waterhouse, R. G.	Kinston
Watkins, F. B.	Morganton
*Watkins, Geo. S.	Oxford
*Watkins, G. T.	Durham
*Watkins, John A.	Asheville
*Watkins, W. M.	Durham
Watson, John B.	Raleigh
Watson, Leon	Broadway
*Watson, Thos. M.	Wilmington
*Way, J. Howell (Hon.)	Waynesville
Weathers, Bahnson	Roanoke Rapids
*Weaver, Henry B. (Hon.)	Asheville
Weaver, W. J.	Asheville
Webb, B. G.	Andrews
Webb, M. L.	Mayodan
Webb, S. Edgar	Draper

Name	*Address*
Webb, W. P.	Rockingham
Weddington, J. L.	Hendersonville
Wellborn, Wm. R.	Elkin
Wessell, John C.	Wilmington
*West, B. C.	Kinston
West, C. F.	Kinston
West, Geo. Harris	Newton
*West, Louis N., O.A.L.R.	Raleigh
West, Robert M.	Salisbury
West, T. M.	Fayetteville
Weyher, V. E.	Kinston
Wharton, C. R.	Ruffin
*Wharton, L. D. (Hon.)	Smithfield
Wheeler, J. H.	Henderson
Whelpley, Frank L.	Goldsboro
Whichard, M. P.	Edenton
Whitaker, A. C.	Julian
Whitaker, F. C.	Enfield
Whitaker, Fred'k A.	Kinston
Whitaker, F. S.	Kinston
*Whitaker, Paul F.	Kinston
Whitaker, R. B.	Whiteville
White, C. S.	Winston-Salem
White, John W. (Hon.)	Wilkesboro
White, R. A.	Asheville
*White, Thos. P.	Charlotte
White, W. M.	Lenoir
Whitehurst, E. B.	Beaufort
Whitfield, Wm. Cobb (Hon.)	Grifton
Whitley, A. D. N.	Monroe
Whittington, Jas. B.	Winston-Salem
Whittington, W. P. (Hon.)	Asheville
*Whittington, W. W.	Snow Hill
Wier, J. E.	Asheville
Wiest, Paul F.	Asheville
Wilcox, J. W.	Laurel Hill
Wilkerson, Charles B.	Raleigh
Wilkerson, Charles E.	Greensboro
Wilkerson, J. B.	Rosman
Wilkes, Grover C.	Sylva
Wilkes, Marcus B.	Laurel Hill
*Wilkins, J. C.	Haw River
*Wilkins, J. W., O.A.L.R.	Mt. Olive
*Wilkins, R. B., O.A.L.R.	Raleigh
Wilkins, Samuel A.	Dallas
Wilkinson, C. T.	Wake Forest
*Wilkinson, R. W., Jr.	Wake Forest
Williams, Albert F.	Wilson
Williams, B. B.	Greensboro
Williams, Claude B.	Elizabeth City
Williams, Edward J.	Monroe
Williams, James Marcus	Warsaw
*Williams, J. H.	Sanatorium
*Williams, John D., (Hon.)	Guilford Station
*Williams, John W.	Washington
Williams, L. L.	Asheville
*Williams, L. P.	Edenton
Williams, N. G.	Franklin
Williams, R. C.	Wallace
Williams, Wm. Norman	Tabor
Willis, A. P.	Candler
*Willis, B. C.	Rocky Mount
Willis, H. C.	Wilson
Wilson, Albert R. (Hon.)	Greensboro
Wilson, Clarence L.	Lenoir
Wilson, N. G.	Greensboro
*Wilson, R. G.	Biltmore
*Wilson, Robert B.	Newton Grove
Wilson, W. E.	Mooresville
Wilson, W. G.	Smithfield
Wilson, W. P.	Madison
Windley, C. T.	Belhaven
Wingate, G. C.	Charlotte
*Winstead, J. A.	Nashville
Winston, A. R.	Franklinton
Wiseman, P. H.	Avondale
Wishart, Wm. E.	Charlotte
Witherspoon, B. J.	Charlotte
*Wolfe, H. C., O.A.L.R.	Greensboro
*Wolff, D. R.	Greensboro
Woltz, John L.	Mt. Airy
*Woode, E. J.	Wilmington
Wood, J. W.	Boiling Springs
*Woodard, A. G., O.A.L.R.	Goldsboro
*Woodard, C. A.	Wilson
Woodard, E. D.	Bayboro
*Woodard, G. B.	Wilson
Woodcock, John H.	Hendersonville
*Woodruff, Fred G.	High Point
Woodruff, Julian S.	Charlotte
Woodson, Charles W.	Salisbury
Woodward, J. G.	Asheville
Wooten, Amos Monroe	Pinetops
*Wooten, Floyd P.	Kinston
*Wooten, W. I.	Greenville
*Wright, J. B., O.A.L.R.	Raleigh
Wyatt, A. T.	Lillington

Wyatt, H. L. ..... Greensboro
*Wyatt, Wortham ..... Greensboro
*Yarborough, Frank ..... Cary
*Yarborough, R. F. ..... Louisburg
*Yoder, Paul A. ..... Sanatorium
*Yokeley, Raymond V. ..... Thomasville
*York, Alexander Arthur ..... High Point
York, Hugh B. ..... Williamston
*Young, C. R. ..... Angier
Young, G. McD. ..... Postell
Young, J. J. ..... Clayton
Young, L. B. ..... Wake Forest, R. 3
Yow, I. A. ..... Georgeville
Zimmerman, Robt. U.
Lexington, R. 4
Zollicoffer, D. B. ..... Weldon

TRANSACTIONS

OF THE

NORTH CAROLINA PUBLIC HEALTH ASSOCIATION

SEVENTEENTH ANNUAL SESSION

DURHAM, N. C.
MONDAY, APRIL 18, 1927

TRANSACTIONS

OF THE

NORTH CAROLINA PUBLIC HEALTH ASSOCIATION

SEVENTEENTH ANNUAL SESSION

Durham, Monday, April 18, 1927

The North Carolina Public Health Association met in Room "C" of the Washington Duke Hotel, Durham, at 9:45 a. m. and was called to order by the president, Dr. E. R. Hardin, Lumberton.

The invocation was said by the Rev. David H. Scanlon, D.D., pastor of the First Presbyterian Church, Durham.

PRESIDENT'S ADDRESS—SOME PROBLEMS AHEAD OF US

By Dr. E. R. Hardin, Lumberton.

The papers of the recent Presidents of this Association have given you a retrospective view of the origin, organization and progress of public health work in North Carolina. In this connection I shall only add that the enormous amount of sickness prevented, the thousands of lives saved, and the great reputation that our State has acquired as a safe place in which to live, is in large measure due to the different departments of the State Board of Health, and to the men and women of this Association who have been on the firing line. Much credit is also due the practicing physicians who have aided with their cooperation and influence, and the appropriating bodies who had the good judgment to make this great work possible. To all these the State of North Carolina owes an everlasting debt of gratitude; for no state can have material assets comparable to the lives of its citizens.

It is my purpose to bring to your attention some of the problems that confront us as public health workers, some of them now in process of solution, others yet to be solved. They are in no sense new or original, nor have I found a solution for them. They are problems that require the thought and consideration of organized groups of men and women interested in public health work. This is such an organization, and to you the people of North Carolina look for leadership in public health and the solution of all their public health problems; because after all they concern the citizenship of our whole State.

As workers in the field you are aware of the fact that many of our people are profoundly ignorant of the rudiments of personal hygiene and disease prevention. This is not only true of the adult population, but thousands of children, especially in our rural schools, either have little more than a primitive conception of personal hygiene or else do

not put their knowledge into practice. As evidence of this fact; go into any average rural school, and ask the children if they have handkerchiefs or tooth brushes; ask how many of them brush their teeth each day, how often they take a bath, and whether they wash their hands before eating. Also observe their lack of personal cleanliness, their manner of drinking from the mouth of the pump, and note the condition of the school privies.

The children are not to blame, they are following the precept and example of their parents. Since many of the parents are incapable of teaching their children the habits of personal hygiene the next logical person to do it is the school teacher, as the child spends a great part of his life in the school room during the formative period when health habits are easily acquired. These lessons must be drilled into them constantly day after day, and who else can do this but the teacher, when the parents fail? The public health nurse and the health officer may help some but if the teachers' environment and training have not given them an appreciation of the value and importance of personal hygiene the task is almost hopeless. For this reason this Association should use its influence to bring about legislation requiring the establishing of a public health course in all teacher training schools, and the demonstration of such knowledge on the part of all teachers as a prerequisite to certification.

Our law governing the physical examination of school children in North Carolina is all right so far as it goes, but it does not go far enough. To any one familiar with this work in our rural schools it is obvious that the law is to a large extent nullified by the fact that the teachers have not been trained in the work, and few of them can do it efficiently. Any process usually seems uninteresting and difficult to people who do not understand it, and the teachers as a whole are no exception to this rule.

My experience with rural teachers has convinced me that most of them know very little about the usual physical defects of school children, and even less about contagious diseases. The information furnished the teachers through the teachers' manual, the contagious disease guides and bulletins has been made as simple and practical as possible; but we must remember that this is a new subject to the majority of the teachers.

The State having placed the responsibility of physical examinations and health instruction in the schools on the teachers, it seems only fair that they be required to prepare themselves to discharge this obligation efficiently. The State of Virginia in 1920 ratified an act, requiring that all teachers in the State should by 1925 have a course "including preventive medicine, physical inspection, health instruction and physical training," to prepare them for health work in the schools by giving them a practical knowledge of the causes, the corrections, and the prevention of hindrances to the best mental and physical development of children. The responsibility for carrying out the provisions of this law was placed upon the State Board of Health, and the State Board of Education. A special course of study was promulgated by the State Board of Health and State Board of Education jointly, and made one of the requirements for certification in all teacher training institutions of the State, and for

the renewal of certificates of teachers already in the service. To meet the needs of the teachers who could not attend such schools or colleges a correspondence course was offered by the State Board of Health. The special course of study comprises the following subjects: Physical defects and their control, communicable diseases and their control; personal hygiene, the teachers health and first aid. The feature that makes this course differ from those ordinarily given is the practice demanded by the actual inspection of children for possible defects in vision, hearing, teeth, throat, weight, and in making records of conditions found. Instructors are asked to impress upon their students that the inspections required of teachers does not at all mean an examination, but only an intelligent inspection of their pupils in order to detect obvious physical defects, and visible symptoms of disease, so as to inform parents of the existence of such handicaps to school work, and to recommend medical attention. North Carolina needs such law as this if we are to continue to progress in medical school inspection, the removal of physical defects, the teaching of personal hygiene, and the prevention and control of contagious diseases.

Next to the lack of education in matters pertaining to public health in the rural sections of our State, probably the greatest obstacle to public health progress is the poor economic status of a large per cent of our rural people. One hundred and twenty-eight thousand of our farmers own no land and belong to the tenant class. Forty-five per cent of the farms in North Carolina are operated by tenants, and a still greater per cent in other Southern states, except Tennessee. It is obvious that the tenant farmer, constituting as he does, so large a proportion of our rural population, must profoundly influence the social, moral and health conditions of our rural people. The character of this influence will depend largely upon an intelligent and sympathetic consideration of the tenant farmer and his problems, by the State and local governments, the land owners, and all social and welfare agencies.

There is no doubt that the farm tenant system is detrimental to the people of our State, from a public health as well as an economic standpoint. The influence of the tenant class on public health in the rural sections is reflected in the high incidence of typhoid fever and bacillary dysentery each year.

The reduction of the death rate in typhoid fever from 35.8 per one hundred thousand in 1914 to 9.8 per hundred thousand in 1925 has had a great deal to do with the popularity and success of public health work in North Carolina, but it is doubtful if the present rate of typhoid fever and bacillary dysentery can be changed in the rural sections, until the thousands of rural homes, particularly those of the farm tenants, are provided with at least the fundamental necessities of disease prevention, namely, safe water supplies, sanitary privies, and screened homes. A sanitary privy and a deep driven well properly located, can be provided at any rural home with very little expense. I have seen owners of large plantations spend enough money in one year for medicines and professional services, in cases of typhoid fever and colitis among tenant families, to provide sanitary privies and safe wells for all the tenant homes on the farm. The tenant as a rule has to pay these obligations, the result

largely of the neglect of the land owner to provide the ordinary means of protection.

You are familiar with the many obstacles met with in trying to protect the tenant class of people from disease. The general public, particularly the large land owners must be better educated along this line. We must show them that from an economic standpoint it is cheaper to provide their tenants with safe water and proper sewage disposal.

An old Latin proverb says "as is the commander so is the soldiers." In the matter of public health "as is the land owner so is the tenant." If the landlord is interested and cooperative the tenants will usually be interested.

An eminent health authority has said that the fundamental work of a health department is to change customs and habits. If this be true we still have many problems ahead of us. So another problem which I present for your consideration is the weaning of babies without cause, and the nursing of babies after the first year. Thousands of babies are deprived of breast milk during the first months, because their mothers think the breast milk is too strong or disagrees with the babies. Many other babies are nursed after the first year, either because of the fear of weaning, or the fallacious idea that continued nursing will prevent conception.

Out of 248 babies of all races examined in a series of baby clinics in Roberson County recently, thirty-one per cent were nursed up to the thirteenth or twentieth month. Poor artificial feeding and prolonged nursing are responsible for most of the malnutrition and rickets we find in this section of our State. Mothers should know the serious consequences of artificial feeding without a doctor's advice, and of prolonged nursing after the first year. The remedy is continuous publicity and instruction by public health workers and the practicing physicians. The newspapers can render a great service to the people by promoting such publicity.

Considering its communicability the difficulty of early recognition, the number of people infected, the loss of time from school, the high death rate, the attitude of the general public toward the disease, and the futility of control measures, measles constitutes one of our greatest public health problems. With the possible exception of the great periodic epidemics of influenza, no other disease paralyzes school attendance and closes so many schools as measles. Chapin, in his excellent work, "The Source and Modes of Infection," says "Measles is a disease which in cities seems to be impossible to check to any appreciable extent by isolation. In Aberdeen, Scotland, it was faithfully tried for twenty years, but no apparent effect was produced on the prevalence of the disease. A census of the children in certain schools indicated that ninety-three per cent of children over ten years of age had had measles. There is no evidence that the same measures adopted in New York had any more effect on the prevalence of the disease than in Aberdeen.

It seems very probable that the disease prevails, because of the unrecognized infectious prodromal state, and no amount of isolation after the disease is recognized can atone for the harm done before the diagnosis is made. In attempting to control measles we should bear in

mind that it is the older child, as a rule, who carries the infection into the home and that the danger to the younger children of the family is greater proportionately than it is to the one who brings it into the household.

No doubt many of you have had the unpleasant experience of trying to check large epidemics of measles, in the rural sections. It is discouraging both to the health officer and the people he is trying to help; because both feel that little of real good can be done. In view of the above facts, should not all health officers welcome any practical methods that may aid in the control of measles.

The use of convalescent serum seems to offer great possibilities both in the prevention of large epidemics in the schools and the reduction of the mortality by protecting very young children and those with poor resistance. The greatest obstacle seems to be the difficulty in obtaining the human serum. However if a sufficient number of convalescent measles cases should agree to give a reasonable quantity of blood for immunization it would be easier to get the blood than to visit every home in the community for the purpose of quarantine. At least you would feel that you were accomplishing something, in securing serum for the purpose of immunizing contacts.

Diphtheria is still a dark cloud on the public health horizon, as the death rate has been on the increase in North Carolina since 1919. This is due to the fact that thousands of children of the pre-school age have not had toxin-antitoxin, and it is in this group that we have the highest death rate. There was little or no decrease in the incidence of diphtheria in New York City, until extensive immunization campaigns were begun in 1920. Since that time there has been a great reduction in both the incidence and death rate of diphtheria in New York.

There are two principal sources of infection with the diphtheria bacillus, namely clinical cases and carriers. Practically all the studies made have demonstrated that 0.2 to 0.3 per cent of healthy school children are carriers of virulent diphtheria bacilli and one per cent of the population as a whole. It is natural to believe that diphtheria carriers are the source of infection in many cases. However diphtheria carriers have been pursued for the last twenty years, and many have been detected and isolated, yet there is little evidence that the incidence of diphtheria has decreased in the country until the last few years. There seems to be good reason to believe that the menace of diphtheria carriers has been over-emphasized. Certainly the detection and quarantine of carriers is impractical in rural health work and will do more harm than good.

The immunization of children from six months to twelve years with toxin antitoxin has done more than anything else to reduce the incidence of diphtheria. We should push our immunization work in the schools; but at the same time we must make a more determined effort to immunize the thousands of infants and pre-school children in the homes. Isolation and quarantine, education on diphtheria prevention and immunization with toxin antitoxin are weapons to reduce the incidence of diphtheria. This with constant warning to parents as to danger of not calling a

doctor early and urging use of antitoxin in large doses, intravenously when necessary, will further reduce the mortality.

From the standpoint of mortality, invalidism, and economic loss, heart disease stands at the top of the list in this country and constitutes one of the major public health problems of today. Heart disease ranks as the principal cause of death in United States for the year 1925, the total number of deaths being 191,226 according to a recent announcement made by the United States Department of Commerce. This disease causes from ten to fifteen per cent of the total deaths from all causes and challenges our attention as workers in the prevention field. No doubt a campaign against tuberculosis twenty-five years ago seemed almost hopeless, as we knew little about the disease, and yet tuberculosis has been reduced from first to sixth place in many states. This should give us courage to initiate a similar campaign for the education of the public on the prevention of heart disease.

The uncertain nature of the etiology of heart disease seems like an impassable barrier at the very beginning. So far as our present knowledge goes, acute rheumatic fever, tonsillitis, chorea and syphilis are among the more prominent causes. Certain large hospital clinics show that fifty per cent of cardiac cases give a definite history of acute rheumatic fever. Overwork and abuse of the heart, causing a degeneration, the same as degenerative diseases of the kidney and other organs of the body, is no doubt a factor in the heart disease problem. However, we must bear in mind the fact that the heart has to withstand the invasion of all the infectious agents that enter the blood stream. The fact that heart disease is now taking top place in the causes of death, brings home to us the fact that these infections take place with far greater frequency and far more killing effect than the diphtheria bacilli on the tonsils, or the typhoid bacillus on Peyer's patches.

We need more data on heart disease, and the various infections and mechanical factors that have to do with its incidence, should be recorded somewhere; either in the home, the doctor's office, the school or the local health department. At the present time there is no definite data as to the per cent of heart disease that follows scarlet fever, diphtheria, influenza, measles, syphilis, tonsillitis, rheumatic fever, etc. After the investigational phase of the work has been carried on to the limit of our present meager facilities, we should endeavor to educate the general public as to the cause and importance of heart disease. The public will have to be as well informed on heart disease as it is on tuberculosis before we can expect to reduce the incidence of this disease as tuberculosis has been reduced.

Still another problem that has not received the attention it merits is the high disease and death rate among the negroes. This is a real menace to the health of many communities. The physical condition of the negro must be improved if the forward march of public health in the South is not to be retarded. The negro has much to do with our every day life. He works in our homes, comes into intimate contact with the family life and with our children, and so must of necessity, affect the health of the white race. The negro population in this country is increasing but at a much lower rate than the whites.

Among the causes of mortality in negro infants, tuberculosis, syphilis and pneumonia are conspicuous. In the birth registration area in 1921 negro infants died four times more frequently from pulmonary tuberculosis, four times more frequently from syphilis, and 2.3 times more frequently from pneumonia, as did white infants from similar causes. There was no marked difference between the races in deaths from diarrhea and enteritis, whereas congenital malformations and injuries at birth were twice as fatal in white as compared with negro infants.

Twenty per cent of all deaths under one year among the negroes were the result of either tuberculosis, syphilis or diseases of the respiratory tracts, but only ten per cent of the deaths of white infants were due to the same cause.

If the mortality from premature births, which is often caused by syphilis, is included with the three conditions mentioned above, the four diseases accounted for forty-two per cent of the deaths of negro infants and but twenty-eight per cent of the deaths of white infants. These figures may be regarded as typical of conditions among the negroes. The high incidence of venereal disease among the negroes is well known. Notwithstanding the large incidence of congenital syphilis among colored infants, the acquired form is only seen in later life; for rarely do colored babies with congenital lues survive. Gonorrhea in both sexes is all too frequent, and exacts a large toll in destroying potential infant life.

In studies made of the problem in Baltimore and Philadelphia, under the same economic working and home conditions, the mortality of negro infants did not exceed that of the foreign whites and was practically the same as the native born whites. Evidently race in itself is not a determining factor, but a lower economic status and lower standards of morals and education. It has been shown by practical experience in Baltimore that the mortality among negro infants can be reduced effectively through the education of mothers and the medical supervision of their children. In an examination of rural children in Maryland, rickets as indicated by definite bony changes was found in only thirty per cent of white children under two years of age, as compared with seventy per cent among the colored. Rickets is no doubt a contributing factor to the high incidence of pneumonia in negro children. Every effort should be furthered which helps in improving the physical and economic condition of the negro, for unless this is done the average standard of public health for white as well as negro will remain unsatisfactory.

When we consider the problems that I have briefly outlined, and the many others ahead of us, there is an almost impelling sense of discouragement; yet we should remember the enormous improvements which have been made in mass sanitation in recent years. Greater protection has been thrown around the lives of infants, children and mothers than at any time in the history of our civilization. More people are paying intelligent attention to their health than at any time since the settlement of America. More sanitary work is being done in the rural communities, and never before has the health of the employee in industry been so well safe guarded. These brilliant successes should renew our courage and strengthen our faith for the greater tasks ahead of us. Let us remember the indomitable courage and faith of our forefathers, who converted the

vast wilderness and deserts of this continent into the most progressive and prosperous of all the civilized countries of the earth, in the span of a few generations. They were the trail blazers, the pathfinders, the pioneers; they were not to see the colossal accomplishments of the future, that their work made possible. We must work in this same spirit, without the hope of the greater reward, if we would be true to our profession and the faith of our fathers.

REPORT OF SECRETARY

By F. M. Register, M.D.

The sixteenth annual session of the North Carolina Public Health Association met in the Ocean Front Rotunda of the Oceanic Hotel at Wrightsville Beach at 10:30 a. m., June 14, 1926. Dr. Sidney L. Buchanan, president, called the meeting to order. The session was opened with a prayer by Rev. A. D. T. Gilmore, pastor of the First Presbyterian Church of Wilmington, N. C. The minutes of the fifteenth annual session, which met at Pinehurst, N. C., were read and approved. After the reading of the minutes, the president delivered his address. Dr. W. S. Rankin was to have been the principal speaker for the night session but on account of an automobile accident was unable to attend. The secretary was instructed to send Dr. Rankin a telegram of sympathy and regret. Dr. Wm. deB. McNider, president of the North Carolina Medical Society, delivered a splendid address on "Public Health Education." On the motion of Dr. W. J. Hunnicutt of Asheville, N. C., seconded by Dr. L. J. Smith of Wilson, N. C., the president was authorized to appoint a committee to consider the matter of Public Health Education and consult with the State Board of Health in reference to the matter. The following gentlemen were named as the committee: Dr. C. W. Armstrong, Dr. L. J. Smith, and Dr. R. L. Carlton. On the motion of Dr. C. C. Hudson, motion duly seconded, the president appointed a committee to study the problem of diarrhea and enteritis and to work with Drs. H. P. Barret and C. A. Shore and devise a practical method of handling this problem. Members of this committee: Dr. H. A. Taylor, Dr. C. C. Hudson, and Dr. E. T. Hollingsworth. The following temporary committees were appointed: committee on resolutions, L. J. Smith, chairman; committee on president's address, E. R. Hardin, chairman; committee on visitors and new members, C. C. Hudson, chairman.

At the night session a committee was appointed to draw up a uniform ordinance governing the use of individual drinking cups at drug stores and to distribute this ordinance to the various health officers of the state. Members of this committee: C. C. Hudson, C. W. Armstrong, and L. W. Corbett. The following officers were elected for the seventeenth annual session: E. R. Hardin, M.D., President, Lumberton, N. C.; J. H. Hamilton, M.D., Vice-President, Wilmington, N. C.; F. M. Register, M.D., Secretary, Raleigh, N. C. The association adjourned to meet in Durham April 18, 1927.

APPOINTMENT OF COMMITTEES

Dr. John H. Hamilton, vice-president, appointed the following Committee on the President's Address: Dr. R. L. Carlton, Winston-Salem, chairman; Dr. R. E. Broadway, Southport; Dr. Sidney E. Buchanan, Brevard.

The following committees were appointed by the president:

Committee on Resolutions: Dr. J. H. Epperson, Durham; Dr. R. M. Buie, Greensboro; Dr. L. W. Corbett, Goldsboro.

Visitors and New Members: Dr. R. L. Carlton, Winston-Salem; Dr. Z. P. Mitchell, Weldon; Dr. G. H. Sumner, Asheboro.

RESULTS OF 4,000 SCHICK TESTS IN A RURAL HEALTH UNIT

By Dr. J. Roy Hege

Health Officer of Forsyth County, Winston-Salem, N. C.

There is nothing new to say about diphtheria. We can only say the same old things that we have been saying for several years. It is not my hope to teach you gentlemen anything about diphtheria that you do not already know. I merely wish to provoke discussion of this important subject. By so doing, we all shall be made wiser and more proficient for the tasks that we are about in our respective communities. A very distinguished American gentlemen said "Undertake not to teach your equal in the art he himself professes; it savors of arrogancy."

We all realize that the success of our efforts in public health depend very much upon existing conditions in the field in which we work. We might call it an environment favorable or unfavorable to public health activities. If such a term may be used, I should say that Forsyth County furnishes a favorable environment for public health activities. I hope you will pardon me for deliberating a little to describe briefly this so-called favorable environment in Forsyth County. The unit is that of rural Forsyth County; the work is in no way affiliated with the health unit of the City of Winston-Salem. The city limit is just as distinct a boundary line as is the peripheral county line that limits us to Forsyth County; the town of Kernersville is not apart from us. It has a population of 2,500 and is the only incorporated town in our field. We cover an area of 382 square miles with a population of about 28,000; this makes a rural density of population of 73.5 persons per square mile. We rank first in the state in density of rural population; the state averages 37.3 per square mile.

Geographically, the county is divided into fourteen townships or seven nurses' districts. Each township has a good consolidated school housed in a modern building like the one shown in the photograph. This is not the largest or most elaborate school building in the county, but in my opinion, is the prettiest. Each nurse's district embraces two of these school districts or townships.

All of our public health activities center in and about these consolidated schools; each school has a well furnished office for the nurse. She has a Continental standard school scale, a desk, a chair, a file cabinet,

one cot and a well equipped nurse's bag. Each nurse is assigned to a district and does generalized public health duty in her district and she is the one that we entrust to "carry the message to Garcia!"

Our personnel consists of seven district nurses, one dentist, one sanitary officer, a clerical secretary, a health officer and an assistant health officer, or perhaps, we could call the assistant health officer, county physician, although at least half of his time is spent in the school and county clinics; the entire personnel is full time except the dentist, who is with us six months, from September 15th to March 15th.

During the past three years we have attempted to enforce certain measures in the prevention and control of diphtheria, paying particular attention to the elementary school children and pre-school children.

In 1924 and 1925 we schicked 3,042 or 67.8 per cent of the children in the consolidated schools. We found 921 or 30.3 per cent positive to the Schick test.

In 1925 and 1926, we schicked 666 children that had not been previously schicked; 17.4 per cent of these were positive. We also reschicked 320 of the 921 read positive in 1924 and 1925 and found 16.2 per cent of these still positive; the greater number of this group had been given toxin antitoxin the winter before. We re-schicked a small number, eighty-eight, that were negative in 1924 and 1925; they remained negative.

In the fall of 1926 and 1927 we decided to limit our work in the schools to the elementary grades. We had an enrollment of 3,628 in these grades. We made a Schick card for each child enrolled in the elementary grades that had not been previously schicked; these cards were filed with the other Schick cards.

On the day that we visited a school for the purpose of schicking the children, every child in the school was given his or her Schick card; the teachers passed these cards out and the nurse explained to the children the importance of having a complete physical record and that we expected to put this across one hundred per cent; in several schools we did, not a single child refusing to be schicked. In other schools, we could hardly expect such a record when we would have the luck to have about a half dozen to faint, but when the program was completed we found that only seventy-two had refused. We had 2,930 cards reading negative, 459 positive and 167 were absent. Of the 459 children that were read positive, at least ninety per cent were given the toxin antitoxin.

To recapitulate briefly, in 1924 and 1925, 30.3 per cent were susceptible to diphtheria. In 1925 and 1926, 17.4 per cent were susceptible. In 1926 and 1927, 13.6 per cent were susceptible. At least ninety per cent of these susceptible in 1926 and 1927 were given the toxin antitoxin. Since the completion of this program in November, not a single child of elementary school age in the consolidated school districts has developed diphtheria. In the past two months I have been called into consultation with the family physician to see two cases of probable diphtheria; these cases were in the elementary school and we have negative Schick records of them on file. The first, a girl of eight years from the Sedge Garden school, developed a suspicious throat while in quarantine with her older sister, who had diphtheria and was enrolled in the high school. The

older sister had neither been schicked nor vaccinated for diphtheria. The elementary school child had been schicked in 1925 and 1926 and found positive. She was vaccinated with three doses of toxin antitoxin. In the fall of 1926, she was re-schicked and read negative. The family physician, on his first visit, administered 5,000 units of antitoxin to this child. I saw her on the next day with the family physician; the throat was fairly clear; it looked very much like a follicular tonsilitis to me. The glands in the neck were easily felt; the tonsils were enlarged and red with white spots on them; the temperature was about 100 degrees F. The family physician informed me that the patient was very much better, that the throat had cleared up, the temperature was down and that he regretted that he had inconvenienced me by calling me; the control case, or the older sister, had run a typical course of that of diphtheria. She had around 20,000 units of antitoxin and then doing nothing extra.

The second case was in the Old Town School District. The case was in almost every detail similar to the first. There were no other cases in the family. Cultures were made from the nose and throat of all three of these cases. The high school girl gave a positive culture from both nose and throat; the other two were both negative from both nose and throat; the cultures were taken the day after the administration of the antitoxin; two smears were made on blood agar slants from the nose and two from the throat. A smear from each was sent to the state laboratory; the other to our own local laboratory. We were at no time successful in obtaining a positive culture from the two elementary school children. I cannot explain why these cultures were negative if it was diphtheria; I know of no reason why immunity to diphtheria should sterilize the throat to the growth of diphtheria bacillus. On the other hand, we have children immune to diphtheria and yet carriers of diphtheria bacilli.

In my brief experience during the past three years, I haven't seen a typical case of diphtheria in a Schick-negative child. But we do not advise parents that a negative Schick is 100 per cent protection. So long as the human element is a factor in the percentage of perfection, so long a negative Schick may be read on a susceptible child. We all see the border line reactions that we are far from being satisfied as to our ability to call it correctly. In these cases, the only safe thing to do is to call it positive.

The question of doing the control as a part of the Schick test has been freely discussed among us. We seem to have about as many notions about the control as there are those of us who do the Schick test routinely. I must admit that I cannot read a pseudo-negative without a control. I've never seen any one who could prove his ability to do it. In fact, I have some difficulty in reading a pseudo-negative with a control in some cases. If I should decide to omit the control, I think I would omit it on the day that I gave the toxin, but would give it on the reading day to all that showed a reaction to the toxin; I would give it in the other arm and give a dose of toxin antitoxin in the same arm, then when I returned to give the second doses of toxin antitoxin I would read the Schick control. In this way I would give the control to only the positive and pseudo-negative; as you know, it is only these that we wish to differentiate. There is a modified method practiced by Park and Schroder in which they give one

c.c. of standard toxin antitoxin subcutaneously; they give it just beneath the skin on the lower part of the arm. It serves the purpose of an immunizing injection and reveals the results of the Schick; those showing a reaction are given further injections. Schroder has used this method successfully in 50,000 school children.

We have been very positive in telling our people that the Schick test was only a means of information and that there is no immunization produced by it. Ivo Nasso, in an article in the American Journal of Diseases of Children, February, 1925, confirms a weakening of the Schick test if repeated after ten or fifteen days. Three or four such tests were sufficient to change the response to negative. Estimation of antitoxin content in the serum of such children showed that the immunization is real. We have always attributed a negative Schick following a previous positive Schick to either toxin antitoxin or passive immunity. I am glad to tell a parent that the Schick may in some way help to immunize the child. They much prefer a treatment to an experiment. W. H. Park says in an article in the American Journal of Diseases of Children last November, "the performing of the Schick test has *almost* nothing to do with inducing immunization. It simply reveals those who are susceptible." I wish to call your attention to the words "almost nothing."

Does the degree of reaction from the Schick test indicate the need of one, two, or even five doses of toxin antitoxin? I have noticed that the reaction to the Schick toxin varies in different individuals. Some give the slightest discoloration while in a few instances I have seen a slough of the epidermis the size of a silver dollar. The full dose of toxin antitoxin reacts severely in these children that have the intense coloring or sloughs. To avoid this reaction, I give one-fourth c.c. of toxin antitoxin for the first dose and continue the treatment for about five doses, increasing the dose from one-fourth to about one and one-fourth c.c. We adopted this practice in order to prevent criticism from both the children and the parents. As you know, a severe reaction from any vaccination excites wagging tongues and they have their influence regardless of the social standing of the owner.

It might be of interest to some of you to know that we have discontinued the use of the consent card. The following act on the part of the Board of Health enables us to abandon its use:

"Under the authority and direction of Consolidated Statutes, Chapter 118, Article 3, and Sections 7065 and 7066, the Board of Health of Forsyth County hereby enact the following rules and regulations which shall govern the Schick test and active immunization of diphtheria in Forsyth County.

"Section 1: The Health Officer shall set forth every effort in his power to persuade children of pre-school and school ages to present themselves to said Health Officer or his Assistant for the Schick test.

"Section 2: The Health Officer or his assistant shall schick all pre-school and school children that present themselves to him. The said Health Officer or his assistant shall return not earlier than four days and not later than ten days and read the schick reaction, recording his reading on the physical examination record of each school child.

"Section 3: The Health Officer or his assistant shall actively immunize all children read positive, combined or susceptible; or he shall post at a conspicuous place in the school building, the names of the children possessing the above mentioned readings as 'Children Known to be Susceptible to Diphtheria.'

"Section 4: That the Health Officer shall notify in writing the parent of each child showing a susceptible reading, provided said child does not submit to toxin antitoxin treatment.

"The above rules and regulations were enacted and are in force, this, the 19th day of November, 1925, and after."

Just how the above read regulations will stand in the courts remains to be seen, but they do express a most favorable attitude of the Board of Health toward the Schick test and the toxin antitoxin vaccination.

I have not asked any parent to sign a consent card since the date these regulations were passed. I was never able to explain satisfactorily to a parent why I was asking him or her to sign such a card. The parent always asked me, "Why do you ask me to sign it? You don't ask me to sign a smallpox consent card; you don't ask me to sign for anything else; you are afraid of it yourself, otherwise, you would go ahead and give it." Then he would end up by saying: "Don't give that vaccination to any of *my* children, doctor." In my opinion, asking people to sign a consent card is a bad precedent to set in any community. If you expect to schick 100 per cent of the children in any school in North Carolina I would advise you not to use the consent card. I don't believe there is any community in North Carolina in which 100 per cent of the people will sign their consent to anything.

DISCUSSION

Dr. Sidney E. Buchanan, Health Officer Transylvania County, Brevard: Personally, I have been out in my county for two months, and I certainly should hate to go to a school and start schicking or giving toxin antitoxin up in that country without first saying something to the parents. I am afraid I shouldn't last very long.

Dr. Hege speaks of the density of population in his county and speaks of it as a rural county. He does not know what rural means. If that is rural, mine is wilderness.

Personally, I have done very little schicking, but I believe we can get a bigger percentage if we go at it in the right way. I have taken one school, an elementary school, and have tried by a process of education to teach the people what we really mean, and we have had between ninety-five and 100 per cent sign. That is not 100 per cent, but it is near it, and the people are in a better humor. They do not feel that I am trying to push something over on them.

Now, as to these severe reactions, personally, I am afraid of them in Transylvania County. If we were to get a markedly susceptible child and shoot a c.c. of antitoxin under the skin, it might have a marked reaction; and I am afraid the man would meet us instead of the child. We have gotten along very well with this in Transylvania County, and if we can keep our feet from slipping I think we shall do all right.

Our percentage of positives runs about forty-six. I grant you that had I been out in a community where I was well known and where the people loved me to start out with and didn't look at me out of the corner of their eyes, whenever I looked around, I should possibly have called some of the positives negatives, but I am not taking any chances whatsoever with those people. I am not taking any chances with those American people; they are good people, the best people in the world when you can prove to them where you stand; but you have to prove it to them first. It is pretty hard work, but you get along all right after that.

As to doing the Schroder test, again I think it is a good thing where you can do it; but in my county you might go to a schoolhouse today, and it might be two months before you could get back, because of the condition of the roads. We have very poor roads. There are a number of the schools to which I have not been able to get nearer than ten miles, and they tell me it will be a month or six weeks longer before I can get there. So I do not believe the Schroder test will work in my county.

Dr. F. R. Harris, Health Officer Vance County, Henderson: I enjoyed the doctor's paper and the remarks that have been made. I have done a good deal of Schick testing after getting the consent of the parents, but I find it a good deal better without the consent of the parents. Recently I have schicked a good proportion of the white children of my county, with the consent of the parents. More recently I have been out to the negro schools and have told them they are just as much entitled to protection as the white people. If you use that argument you will find that it works for both the Schick test and toxin antitoxin. I have given it recently to 3,075 school children. I find negative forty-five per cent, positive fifty-five per cent. That percentage is larger than these gentlemen have given. I do not want to pronounce a case negative when it may be positive. I get hold of these colored children in that way. Fifty-five per cent were positive or pseudo-positive, and forty-five per cent negative. During all the time I have been giving the toxin antitoxin or Schick test I have never found a case of diphtheria in a child whom I had declared negative. We have no diphtheria in my county any more, from the schools; it comes from children of the pre-school age.

Dr. L. W. Corbett, City and County Health Officer, Goldsboro: All through every paper read here this morning there has been something said about how to handle the other fellow. We have in our county (Wayne) one of the most peculiar individuals it has ever been my good fortune to meet, a man who was for a number of years sheriff of the county. He is familiarly known as Sheriff Bob Edwards. I was riding with him one day and asked: "How is it you get along with these folks and they all seem to love you? Some of them you have put on the roads and some in the penitentiary, but they all love you." He said: "Well, I never go into a man's house without asking him for something. If a man gives you something he is bound to take an interest in you after that." So I think it is a good thing to call on various organizations, church organizations, etc., for help in carrying on various phases of health work. They all feel some interest in it then and get out and boost you.

I have a little girl of my own, now approaching her ..... birthday. I schicked her when she was about eight months old, and she was negative. Her mother was not satisfied, so we gave her toxin antitoxin. When she took the second dose she had temperature and three days later developed paralysis of the right hip. Our family physician, Dr. House, said perhaps some of the antitoxin was dead and the toxin was not and she got a toxin reaction. We waited a year and schicked her again; she was still negative, but the mother was not satisfied. We gave her a dose of toxin antitoxin, and she developed temperature and a weakness in that right hip again. We have not been able to give her the full five doses yet, and we can not feel that she is immune.

Dr. N. C. Daniel, Oxford: I am physician to the Oxford Orphanage. We never trust a Schick test, but give toxin antitoxin to every child that comes into the institution. I have found that it pays. When I began to work there six years ago, just at the beginning we had an epidemic of diphtheria, and I know Dr. Morris will bear me out in saying that we had one fine time finding the carriers. So after that every child that came into the institution was immunized against diphtheria by toxin antitoxin, and we have never since that time had a case of diphtheria in the institution except once. That child came in and, according to Dr. Morris, was not thoroughly immunized before he developed diphtheria.

I do not know much about the Schick test, and I do not depend on it. I do not care how many times I give an inmate of the Oxford Orphanage toxin antitoxin, I have never had any bad results. I have never had any with typhoid vaccine and never any with whooping cough vaccine. I do not give all the vaccines recommended by the State Board of Health, but I have never had a case of diphtheria since I began vaccinating every child, the day it gets there, with toxin antitoxin. I have watched Dr. Morris in the Schick test and in toxin antitoxin, and I have found out the safest thing I can possibly do is to vaccinate every child against diphtheria, regardless of how long it has been since he was vaccinated before. As a consequence we have never had a case of diphtheria since that time, and we have 425 children from everywhere in North Carolina, from all kinds of parentage and from all kinds of conditions. So my idea is to vaccinate, vaccinate whenever you want to and you will never have bad results.

Dr. A. C. Bulla, City and County Health Officer, Raleigh: I am a little confused on Dr. Hege's re-schicking. I think he had sixteen or seventeen per cent positive. I should like to know what percentage of that sixteen or seventeen per cent had taken toxin antitoxin.

Dr. Z. P. Mitchell, Health Officer Halifax County, Weldon: For my part, I have abandoned the Schick test. It takes no longer to go around and give a dose of toxin antitoxin than it does to schick them; besides, you have to go back and read the schicks. If I have to call a test positive when it is negative, in order to get that child to take the vaccine, I am going to insist that everybody take the toxin antitoxin. My plan is to ask every child over twelve years of age if he wants to take it, but I insist that all children under twelve years of age take toxin antitoxin. I have yet to see a bad or severe reaction from a single dose. I

believe in giving the toxin antitoxin (five doses) regardless of whether they are schick-positive or schick-negative. I save time by it and get more work done. The Schick test, in my observation and experience, is not to be depended upon, and I say every child from six months up to twelve years of age should take toxin antitoxin. You can not tell the parents that 100 per cent of them are protected then, but from seventy to about eighty-five per cent are.

Dr. John W. Williams, Health Officer Beaufort County, Washington: I want to congratulate Dr. Hege upon his results; and I want, also, to ask if he has ever re-schicked any of the children that were negative, and has he found that it came and went in these children?

Dr. Hege, closing the discussing: Dr. Buchanan raised the question of being able to do the Schick test in his county without the consent of the parents. I believe where the compulsory smallpox vaccination has been enforced it is not a great problem to do the Schick without the consent. If you have never enforced compulsory vaccination for smallpox, you have an absolutely new field to work in. If every one has been made to realize that when the health department says they must be vaccinated that it means compulsion for vaccination for smallpox then you can come nearer doing mass diphtheria vaccination. We usually do it together. When we go out to schick the children, if a child has not been vaccinated for smallpox we scratch the arm and do the schick then. It is no trouble while the sleeve is already up.

Dr. Bulla's question, as to the percentage of positives. Just how many were positive the first time and how many received toxin antitoxin, I cannot answer because I did not collect that information from the records. The information is in the records, but I did not develop it for this paper, so I do not know how many of the children, who were positive the second time, had received the toxin antitoxin previously.

Dr. Williams referred to some children who are negative when you schick them one time and when you go back and re-schick them they are positive. I have not had that to occur, with the exception of two cases. There are two children in Forsyth County that were schicked and recorded as negative. On some later date we re-schicked them, not because we had any reason for doing it, but because the children said they wanted to be tested again. We found about two positive, I think. Why? I do not know; perhaps it was because of faulty technic.

Dr. Hardin, President: The gentleman who comes next on the program is that rare combination of physician and executive and orator, and he has given freely of all his talents to the furtherance of health work in North Carolina. We are very fortunate today in having with us Dr. Laughinghouse, who will now address you. (Applause).

ADDRESS

By Charles O'H. Laughinghouse, M.D.

Secretary State Board of Health, Raleigh.

I have no address to make. In order to show you how inaccurate newspapers are, I shall prove to you by my actions here today that I do not possess the oratorical gifts that have been alluded to.

The first thing I want to do is to express my appreciation and my delight in seeing this section so very well attended. And I do not think I have ever heard anywhere papers delivered and discussed that were more pertinent to present-day conditions than those to which we have had the pleasure of listening today.

Next I want to say to the health officers, county and municipal, of North Carolina that, if they have any apprehension or if their activities have been slowed up during the last few months because of some uncertainty as to the policies of the State Board of Health, they have no need for apprehension. The same policies of the State Board of Health and the same practices which have been in operation for the last few years will still be in operation, and nothing will be undertaken which can possibly affect the policies of any county health officer or municipal health officer.

The next thing I want to say to the county and municipal health officers is that one of the principal purposes of the State Board of Health, in addition to those activities which all of us are attempting to carry on, will be to get the medical profession of North Carolina more deeply interested in health work in North Carolina. It seems to me that the health officer, either municipal or county, could do nothing that would give an impetus to health work quite so strong and quite so satisfactory as lending his assistance to the medical profession in his own community. I believe—in fact, I know—that the time has come when North Carolina can not go further with her public health undertakings until the medical profession puts its mind and heart upon this particular line of work. The contagions and infections are being handled satisfactorily; but the aftermath of these contagions and infections, and the strenuous life of our people today, with other conditions, are decreasing the life of our people because of cancer, heart, kidney and circulatory diseases. There are approximately three million people in North Carolina and less than 2,500 doctors. If the county and municipal health officers and boards of health could impress the people of North Carolina with the necessity of annual and semi-annual health examinations sufficiently to have every man, woman and child in the state examined, it would mean pretty nearly 2,400 examinations apiece every year for the medical men of North Carolina. For the purpose of stimulating and interesting the medical profession and people at large in this very important matter, the State Board of Health has financed the coming here of Dr. C. Ward Crampton, of New York City, who, from what I can understand, is a past grand master in this line of work. This evening Dr. Crampton will hold a clinic and give a lecture on periodical health examinations. We hope it will be attended not only by health officers but by medical men through-

out the state. The only thing that Dr. Crampton can do, so far as the health officer is concerned, is to give the health officer capacity and insight so that he will be prepared to encourage people to come not to him but to the doctors of the community for these health examinations. Tomorrow Dr. Crampton will give another lecture and clinic. If you can interest all the gentlemen who happen to come here to take the time to hear Dr. Crampton either tonight or tomorrow, I think it will mean a very great deal to North Carolina.

Lastly I wish to say that I appreciate more than any man can express the privilege and responsibility of working with the health officers of the counties and municipalities of North Carolina. I do not feel that I am your executive officer; I do not feel that I am the man to lay down arbitrary rules and see that they are carried out, regardless of other considerations; but I feel that I am one of you; and I feel that, God helping, I can remain one of you.

I thank you, gentlemen.

A REVIEW OF MILK-SANITATION PROGRESS IN NORTH CAROLINA

By Malcolm Lewis, S.B.

Assistant Engineer, Milk Sanitation, North Carolina State Board of Health.

It is hardly necessary to go into the reasons which justify sanitation of milk supplies before this body. It may be interesting to review briefly the improvement that has been made in milk sanitation in North Carolina since 1924, when the subject was first given attention by the State Board of Health.

As a result of a preliminary survey in 1924 it was found that twenty-one cities had a milk ordinance and were carrying on control measures of some sort. A detailed study of the various ordinances brought out very strongly that there existed a great variance in the individual ideas of health officers and milk inspectors as to what should constitute the essential requirements of a milk ordinance. That there may have been a subconcious idea of the necessity of uniformity was shown by the way in which some of these ordinances were drafted. The health officer or milk inspector obtained copies of milk ordinances already adopted by other cities. In a few cases when one was found that seemed to fit, it was adopted outright; in other instances changes were made in some one of them to make it accord with that individual's ideas of what his local conditions demanded. This was due to a very general feeling that conditions in one city were so different from those in others that changes must be made, even in the basic requirements of sanitation as well as in the lesser details of administration.

With this variance among the ordinances, some omitting important essentials, others tending to have too many non-essentials, and with all ranges of permissible bacterial limits, from those so exacting as to be impracticable of enforcement to none at all, it was found that no intelligent comparisons of the relative sanitation or safety of the different milk

supplies could be made. There was not enough coincidence of basic requirements to furnish a criterion of comparison, and it was an almost hopeless task to keep in mind the variations between the different cities.

Dairymen frequently criticized some specific requirement, would cite some other city that did not have such a provision in its ordinance, and would ask why their city should demand compliance. Such an attitude on the part of the producers reflected their feeling that the men who should have been best informed on the subject could not agree, and that therefore there could be no sound basis for their ordinances.

To bring uniformity out of the then existing chaos, and yet to continue to recognize milk sanitation as a municipal function, at first seemed impossible of attainment. At that time there was brought to our attention a standard milk ordinance, developed by the U. S. Public Health Service, which had stood the test of a year's trial in several cities of Alabama. After a careful study of this ordinance it was approved by the North Carolina State Board of Health to be recommended for local adoption by the cities of the state.

Of the twenty-one cities in 1924 that had some form of milk ordinance seventeen have adopted the Standard Milk Ordinance in place of the one they had. In addition, sixteen other cities have adopted the Standard Milk Ordinance as their first milk ordinance. This makes a total of thirty-three cities now operating under one set of requirements. It should be noted that Halifax County employs one full-time inspector for the five cities of Weldon, Rosemary, Roanoke Rapids, Enfield, and Scotland Neck. Actually this makes the total thirty-seven cities under the Standard Ordinance, but since these five cities have combined for enforcement under one inspector, they are treated as one unit under this report.

Many of the smaller cities have in operation municipal water filtration plants, most of which are already equipped with laboratory apparatus to carry on the bacteriological control of the water supply. In such cases, in the absence of funds or a separate milk laboratory, the basic equipment of the water laboratory is augmented by the addition of enough apparatus to enable them to carry on milk analyses. The men in these laboratories have already received fundamental training in bacteriological work and are for the most part college graduates. But slight additional training is necessary to enable them to do dependable milk analysis. From this point, when occasion demands, and when the personality of the individual is suitable, it is but a short step to train them in dairy inspection work. This arrangement is recommended only in the case of the small city with few dairies, where the cost of even part-time milk inspection and a milk laboratory would be excessive. Some cities without water plant laboratories or milk control have benefited by adopting both lines of work when shown the expense was limited to but one technically trained employe and one laboratory.

In still other small cities where meat inspection is carried on by a part-time local veterinarian, milk inspection has been added to his duties. Practically all the expense in such cases has been defrayed by the income from the usual fees charged for meat inspection.

One of the advantages of the Standard Milk Ordinance is that it enables comparisons to be made between cities as to the relative excellence of their milk supplies. This is done by establishing a milk supply rating for each city, based upon the total number of gallons of milk which comply with each item of sanitation, and giving like consideration to pasteurizing plants, bacterial and temperature averages. During the summer of 1926 ratings were established for all North Carolina cities operating under the Standard Milk Ordinance, by an officer of the U. S. Public Health Service, the results of which have been compiled and sent out. In eight cities it was possible to establish a city milk rating for 1925 as well as for 1926, and thus a measure of the improvement made was established. The differences between the 1925 and 1926 ratings in these eight cities, for their retail raw milk supplies, ranged from 11.1 to 53.5. The production of milk was increased in six of these cities, ranging from 3.9 per cent to 37.1 per cent increase. One city showed a decrease of 10.5 per cent which was probably due to the condition of extreme drouth then prevalent in that section, and one decreased 0.9 per cent (a difference of about four gallons). The next rating as compared with that of 1926 will show still higher rating figures, as many of the cities in 1926 had not reached the stage of announcing grades. At the present time twenty-two cities (or two-thirds of the total number) have announced grades.

Since the Standard Milk Ordinance is not confined to North Carolina but is in use by fourteen states, the U. S. Public Health Service has recently compiled a "code" to enable more uniform interpretation of the grading requirements. The tentative draft of this code has been sent to all milk inspectors for their criticism and any changes they might care to suggest. The final compilation when published should represent an excellent standard of practice for milk sanitation.

Recently the U. S. Public Health Service has established a testing station at Chicago to determine the efficiency of all types of pasteurizers. A preliminary report of this work was presented at the last meeting of the American Public Health Association, and was published in the February Journal. While reports on specific makes has not yet been made public, certain fundamental facts necessary for efficient operation of any machine have been established. These are briefly, outlet valves flush with the inside surface of the vat, to eliminate dead-ends and insure that *all* the milk has been held for the required time at the required temperature. Prevention of leaks which would either (1) allow raw milk to enter the vat during the holding period, or which would (2) allow milk to escape from the vat before it had been held the proper length of time. Elimination of foam formation on the surface of the milk, since this foam would not receive the required temperature. Provision of accurate thermometers for controlling the pasteurization temperature. Pasteurization equipment throughout the state is being corrected as to these points in order to make the process as nearly one hundred per cent dependable in operation as possible.

While the city milk rating has its place and value, it is intended to supplement this with a constant check as to the dependability of grades. In other words, for any given city, does the milk labeled "Grade A" comply with Grade A requirements? Those cities in which the grading

is found to be dependable will be entitled to listing from time to time in the Public Health News, and such publication will amount to certification by the State Board of Health that the requirements of the Standard Milk Ordinance are being lived up to.

Since milk sanitation and control in North Carolina is a municipal function, in the exercise of which the State Board of Health has no authority, the present widespread uniformity of milk standards throughout North Carolina has only been possible through the cordial and wholehearted cooperation of health officers and municipal officials with the State Board of Health. The entire credit for the tremendous improvement made in milk sanitation is due to the efforts of the local health officers and milk inspectors who have done the work.

DISCUSSION

Dr. J. H. Epperson, County and City Health Officer, Durham: I think there is specific evidence of progress in milk sanitation in every community where this work has been done. If you will just look around a bit it will not be very much trouble to obtain this information. In the first place, there is specific evidence that the per capita consumption of milk has been increased as a direct result of sanitary progress in the production and handling of this commodity. In the second place, we know that there has been very definite progress made in the control of the spread of certain diseases through milk supplies. It behooves us to encourage the consumption of milk. I fully believe that as much harm is done by the lack of the use of milk as by the use of milk of inferior quality. The use of milk has been and is being increased to a large extent through the confidence the general public has in milk supplies that are properly supervised by health organizations. There is also evidence that the public to a large extent would not be satisfied without adequate milk control work. Many of you men who are directly or indirectly engaged in milk control work well know the reaction on the part of many housewives when their favorite milk dealer is demoted or placed in a lower grade. The reaction is usually of sufficient severity to cause the dealer to correct his errors without delay.

I think there is considerable argument in favor of the standardization of milk-control work. As Mr. Lewis has just said, there are about thirty-seven cities in North Carolina engaged in milk control work under the standard ordinance. We well know the confusion which has arisen in the past through the attempted interpretation of the various and sundry types of grading schemes. If for no other reason, the standard milk ordinance can be justified from the standpoint of cutting out confusion on the part of the general public. Persons who live in one community and come to understand how to purchase milk by grade are not suddenly upset if they move to another community and are familiar with the grading scheme. This within itself forces the milk producer to place on the market a wholesome and safe product provided the control work is properly carried out on the part of the health organization.

Dr. Z. P. Mitchell, Health Officer Halifax County, Weldon: In discussing this paper I beg leave to tell you something about how I have

managed to control or supervise milk sanitation in my county, for the reason that so far as I know nobody heretofore has attempted to regulate the sanitary control of milk in towns of under four or five thousand inhabitants. In telling you what I am doing, I do so with the idea that perhaps there are other counties represented here in this group of health officers that have the same peculiar environment and circumstances that we have. During the fall of 1925, before I went to Halifax County as health officer, the Halifax County Board of Health went ahead and adopted the standard milk ordinance, apparently without thinking of what they were doing or what the results were going to be or where the money and the machinery to operate the standard milk ordinance were coming from. When I came into the work in January, 1926, I was advised that I had just as well let that drop, that they did not know where the money was coming from, that no plans had been devised, and the best thing was to forget it. I went before the county commissioners again and again, and they were almost dumbfounded when I told them they had adopted the standard milk ordinance recommended by the county board of health and I wanted the money to put it into effect. I met with them several times before we got the money. Finally they granted an appropriation of $1,200 a year. That was not enough, but they said to go out to the towns and get the rest of it. We have five towns in this town-and-county cooperative milk-sanitation work. None of them has over 2,500 people except Roanoke Rapids and Rosemary combined. Rosemary not being incorporated. Weldon has the only water laboratory in the county. We realized that if Weldon would do the laboratory work it could be done cheaper there than by any other town in the county and could be done with very little additional equipment, about $100 worth. We went to the towns and asked them for $25 a month a piece, to pay the inspector, Weldon doing the laboratory work as its part. That made $100 a month. Suffice it to say that every bit of the milk being sold in our county was in D grade, according to the standard milk ordinance; now, in six and a half months' time (the work was actually started in September), 85 per cent of the milk is in A grade. The work is going on with the minimum amount of friction and the maximum amount of efficiency. I have heard of only one mob that was definitely organized to shoot up and do entirely away with the health department, and some good friend intercepted that, so we are all living and getting on very well. I believe that this is the way for any other county that has several small towns in it to put on as good milk sanitation as you can get right here in Durham, and I believe in any county that has such a situation any health officer who does not take advantage of it is falling short of his opportunity. I have nursed this proposition, introducing it into communities that had never had anything of the sort before; you can realize that it had to be a bottle-fed infant and had to be nursed and tended carefully. It is purely and simply an educational proposition. Before I went to Halifax County false information had been circulated around that everybody selling milk had to do thus and so, had to milk the cows in a concrete-floored barn, etc.; and until I could convince them to the contrary, that they could milk their cows where they pleased and all they had to do was to label the milk so the consumer

would know what he was getting, it was an uphill fight; after that, they readily accepted it. Progress is slower, to be sure, than if the law had teeth in it; but the people accept it more readily, because they do not like to be driven.

Dr. Arthur H. Williamson, Charlotte, N. C.: Not being a health officer I do not know much about the financial side of this question. That is Dr. McPhaul's problem in Mecklenburg County and I do not bother about it. We get all the backing, moral and financial, that we need.

Mr. Lewis' paper is very valuable, I think, but he missed the keynote of the whole situation. You have to sell the idea to the farmer! I grant that you cannot put it over without the cooperation of the health officer and the milk inspector, but you have to sell it to the dairyman. That was one of the first problems we tackled—selling the idea to the farmer, making him proud of his plant and proud of his product. Here is a little idea we struck on,—that of giving the dairymen a certificate of merit. You would be surprised to see how proud they are of it. Our fellows frame them and hang them up and show them to visitors. We have given fifty-eight grade A certificates. Here is one of which they are not quite so proud (showing grade B certificate), but we have only four of these in Charlotte selling raw milk in bottles, and in sixty days I hope we shall have none. The people are getting educated so they do not want grade B milk.

For the purpose of showing these fellows in a very concrete way all that is required for producing grade B milk to be sold to pasteurizers, we erected a little milk plant in the square back of our city market. We have a sanitary privy there, built according to Mr. Miller's specifications; pump hose; sterilizer, etc. You know hot-water sterilization is permissible for grade B milk for wholesale purposes, only two have hot-water sterilization,—all others have steam sterilization. We are striving for the top rung of the ladder in this work.

We have gone to rather a good deal of trouble and expense in developing a card for putting in our restaurants, hotels, cafes, etc., and the card we have is a three-color scheme with one printing. After you get the plate it is no more expensive than other printing. If you like, you can use four colors with two printings. They are attractive in appearance and that makes the restaurant owners and cafe owners proud of them. They do not like to have little unattractive signs forced upon them for they have to display the placard we furnish. They have promised me to have their placards framed.

We have a grade A milk producers' association organized in Charlotte. The producers came together, organized, and proceeded, as their first step, to get up a whole page advertisement to appear in the Charlotte *Observer* and *News*. They are there 100 per cent and when you have farmers organized 100 per cent something has been accomplished. Our fifty-eight Grade A producers are represented in this advertisement and they each have their small individual cuts which they will use on their bill heads for advertising purposes.

The point which I wish to emphasize is that you have to get the cooperation of the *dairymen* and give *them* credit instead of the health officer and the milk inspector.

Dr. C. C. Hudson, City Health Officer, Greensboro: I desire not so much to discuss the paper as to ask some questions. One is in regard to our basis of comparison. Mr. Lewis just dropped a hint about this part of the work, about having a basis of comparison, and how we are going to compare these various units. Most of you have probably received your rating samples put out by the United States Public Health Service. That brings up the question as to just what basis we are going to use in comparing milk in different cities and the different kinds of milk. The standard ordinance is fine; the system of enforcement by the health department is fine. I want to let you know that I approve of what has been done by the State along this line. But when we come down to comparisons of milk in different cities, what do we find? First, if it is Grade A milk it gets fifty points, which is one-half; then if the milk is pasteurized it gets an additional fifty points, making 100 points. The question came to me whether that is just right to the dairyman who does produce a good Grade A milk, especially in the smaller cities where it is absolutely impracticable to put over a pasteurizing proposition. There is no doubt that pasteurization is a great thing, and I should like to see all our milk produced as Grade A milk and then pasteurized. I think pasteurization bears the same relation to the milk supply as chlorination does to the water supply; we should first have a good supply and then apply this additional protection. But is it entitled to fifty points? Are we not using a little artificial stimulation in putting over pasteurization? Should not we give our raw milk a little more? This is a question which I should like to hear discussed, and I think this is the proper place for it.

PRENATAL AND INFANT NURSING SERVICE IN MATERNITY AND INFANCY WORK

By Miss Draper Fultz, R.N.

State Board of Health, Raleigh, N. C.

While the death rate of infants under one year has been on a decrease in the United States for a number of years, our rate in North Carolina has been practically at a standstill. We lose annually an average of 6,735 infants under one year of age. One half of this number (3,367) die in the first month of life. In addition to this we have nearly 4,000 stillbirths annually. And yet, it has been proven that the number of deaths among infants under one month and also the number of stillbirths can be lowered with almost mathematical precision where it has been possible to give good care to mothers during the prenatal period as well as during the actual delivery and the postnatal period.

Statistics show that in the United States we lose more women between eighteen and forty-five years from causes pertaining to childbirth than from all other diseases except tuberculosis. The causes of these deaths rank as follows:

1. Puerperal sepsis
2. Toxemias of pregnancy
3. Accidents at birth

In North Carolina we find the causes the same, but in different order.

1. Toxemias of pregnancy
2. Accidents at birth
3. Puerperal sepsis

We lose over 500 mothers each year from causes relative to childbirth. The majority of these (an average of 252 each year) are due to toxemias of pregnancy and convulsions.

From this study it seems that our greatest problem is good prenatal care for every expectant mother.

In Detroit, Michigan, where the prenatal clinic service is well developed, we get the following interesting and challenging figures on the saving of infants in the first month of life as a result of good prenatal care: Of 331 white patients having had prenatal care at the clinic, only nine infants died in the first month of life—a rate of 27.2 per 1,000. While in the rest of the city the rate for white births was 42.9 per 1,000. The stillbirth rate for white patients was 26.5 per 1,000 as compared with 48.2 in the rest of Detroit.

Among the colored population the difference was even greater. Here we find deaths under one month forty-four per 1,000 with clinic care and 67.9 per 1,000 without clinic care. Stillbirths were 44.2 per 1,000 with clinic care and 121.5 per 1,000 without clinic care.

The saving of mother's lives was also an important result of this work, as in the two years (1922-1923) among 3,200 mothers cared for at the clinic only ten died from causes pertaining to childbirth, a rate of 3.1 per 1,000, while the rate for the city was more than twice as high, 6.7 per 1,000.

In a prenatal nursing service, our ideal should be that ultimately every expectant mother in our State shall be under medical supervision during her entire pregnancy. We are far from our goal at present. The great majority of our mothers go through pregnancy with little or no supervision or instruction.

It is not always easy to convince a patient that in taking proper care of herself during pregnancy, she is literally taking care of her living, growing baby. The nurse who gets the most results with her prenatal cases is the nurse who wins the trust and confidence of her patients. The advice and instruction of a nurse amounts to almost nothing unless she can gain this confidence in her ability and sincerity.

Parenthetically, but not apologetically, let me say here that the subsequent references I shall make to methods of maternity and infancy nursing are not meant to imply that you are not thoroughly familiar with these matters, but rather to emphasize and to reemphasize the importance of the establishment of a thorough system of routine on the part of the maternity and infancy nurse as she goes about her daily duties.

Each patient visited must be considered personally in taking social and physical history and in giving advice and instruction. In the initial visit a thorough history must be taken on each case, urinalysis and blood pressure recorded and a record made of instruction and advice given.

On each subsequent visit, record any changes in the patient's condition and any additional advice given.

Much common sense and tact may be used in correcting diet and habits in general. Usually the economic status must be considered, or else advice is given in vain. The nurse can help an over-worked mother plan to get her daily rest; encourage her to eat less meat and more green vegetables, fruit and milk; calling attention to the fact that they are not only better for her and her baby, but are cheaper; help plan an inexpensive layette and a few necessary supplies for a home confinement. The time spent in helping a mother cut out baby clothes, is not time wasted. There is no better way to gain her respect and confidence, and this will stand her in good stead later when she asks the mother to stay in bed at least nine days, or urges her to nurse her baby by the clock.

All advice must be practical if it is to be of any value. If an expectant mother has the entire care of her home and children, the washing and ironing and all meals to prepare and, in addition, spends her spare time in the tobacco or cotton field it is foolish to take up time talking about daily walks in the open air. Here the time may be more profitably used in helping her plan her work so she can lie down and rest at least a few minutes morning and afternoon.

Since toxemia and convulsions form our chief cause of maternal mortality, the main consideration of a prenatal conference should concern correction of faulty diet and the avoidance of working to the point of exhaustion or undue fatigue. The average woman works in the field, office, store or factory and lack of time for the preparation of meals quite often necessitates frying an entire meal of meat, vegetables and corn bread. This diet often repeated for days, coupled with over-fatigue, is largely responsible, I believe, for our unusually large number of maternal deaths from kidney complications.

The problem of infant hygiene, which mainly resolves itself into the question of infant nutrition, is one that has received too little thought or consideration and yet it is one of our greatest problems. On the whole, we find a pitiful lack of knowledge of infant care in general, and especially concerning infant feeding. As a result, many babies literally starve to death in the first few months of life.

I think we are all agreed that the basis for infant nutrition is good prenatal care. Unless the baby has a good prenatal background, he has an uphill road to travel.

I have learned to keep in mind the prenatal case with toxic symptoms, making it a point to keep in close touch with her after delivery, and using every effort to keep her under care of her doctor until all toxemia has disappeared. The relationship between a toxemia of pregnancy and the ability of the mother subsequently to nurse her baby successfully, is definite and close. Without care and supervision the baby invariably begins to lose weight and the mother becomes discouraged and decides to wean him. The result is usually the same: a neighbor is consulted and the baby put on condensed milk, this being the easiest way out of the difficulty.

It takes much patience and tact to induce a mother to continue nursing her baby under such conditions. Not only the post-toxic mother, but other mothers, on account of many causes and conditions will experience unsatisfactory efforts at breast feeding. And here an intelligent and sympathetic nurse can be of invaluable assistance to physician and mother in their effort to make possible the continuance of this most important function. No more valuable service can be rendered by a maternity and infancy nurse and none that will pay higher dividends in infant lives, than the successful termination of efforts to continue breast feeding. It is unnecessarily time consuming to set forth figures showing the difference in mortality rates for breast fed and bottle fed babies. The main point for the consideration of the maternity and infancy worker and especially the nurse, is the large number of mothers who resort to bottle feeding when it is perfectly possible to continue breast feeding. The three great and effective weapons in the fight for breast feeding are rest, diet and persistency of effort. The hardest of the three to enforce is persistency of effort in those cases where the initial efforts in the first few days or weeks are unsatisfactory. It is so easy to give up and quit. Yet it is well to remember that even a comparatively poor effort at breast feeding may be better than the best effort at bottle feeding. If the mother can be prevailed upon to rest an hour or so during the day, especially just before and just after nursing the baby, partake of an adequate and well balanced diet, and persist in putting baby to breast at regular intervals regardless of apparent results, it is surprising how many will successfully establish lactation and nurse the baby over the normal period of time. In these cases of difficult lactation, manual expression after each nursing is a highly valuable mechanical aid, the technique of which can be easily explained and demonstrated to the mother. Such a procedure regularly and persistently practiced together with ample rest (nine hours at night and an hour or more during the day), a regular balanced diet including a quart of good *sweet* milk and regularity of nursing, is about all in the average case that is necessary to get results.

Complementary feeding (that is feeding offered immediately after each nursing) may be added by the physician until lactation is well established and if necessary they may be continued indefinitely—anything to keep from *weaning the baby.*

It is impossible to lay down any cut-and-dried procedure for infant nutrition work since each infant demands individual attention and consideration. There are, however, a few basic principles that must be kept in mind: some idea of regularity of feeding, provision of a separate bed for baby, ordinary cleanliness and protection from flies. Also abundant fresh air and sunshine for both mother and baby. These rules form the basis of our advice and instruction to all mothers.

Every mother is advised to have a separate bed for her baby. Even the father in poor financial condition, if made to realize the need, will consent to make a bed using a soap box with sticks for legs and half of a barrel hoop tacked to either end to hold up the mosquito bar. This little bed may be placed by the mother's bed where she can reach the baby without getting up. It answers every purpose and has the added

value of being easily moved on porch or yard in the fresh air and sunshine, as the baby grows older.

This separate bed for the baby seems a small thing and unimportant, yet we lose an average of fifty babies each year from "accidental suffocation" most of them being smothered by a sleeping mother. In addition to this, it is reasonable to expect mother and baby to rest better at night if sleeping alone, and we know that rest is one of the essential requirements for the nursing mother.

We get very little result, however, if we merely run through a list of things the nursing mother should have to eat; advise a kiddie-koop with screen wire; suggest an extensive layette, or even insist on orange juice daily. Again the advice must be in keeping with the family income, or it is worthless.

In the case of weaning, the nurse can help the doctor by going into the home and demonstrating the preparation of food. We seldom find a mother who has the first idea of the proper method of weaning her baby. She usually "just weans him." Many babies are found badly undernourished because of bad methods of weaning. It is our policy to establish wherever possible a contact between mother and physician to the end that food may be gradually added before weaning time so that there is no abrupt termination and consequent interference in the nourishment of the baby. This is another energy saving procedure for the mother, and when once tried invariably makes a convert of the mother who, perhaps, has previously spent many harassing and sleepless nights during the weaning period.

A special program of infant nutrition work was started in Richmond County in November 1925, for the purpose of demonstrating the most practical methods to be used by maternity and infancy nurses in assisting private physicians to bring undernourished infants up to average weight.

The stimulus for this effort was furnished by the fact that many physicians are handicapped in their efforts to correct nutritional and dietary disorders, by a lack of intelligent cooperation on the part of the parents. All babies selected for this demonstration were definitely undernourished and some of them had approached what is considered the extreme in emaciation. Practically all of them showed evidence of rickets. Some very scrawny and undersize from birth, while others were of average weight at birth, but had consistently failed to gain for one reason or another.

The nurse had an interview with each physician in the county and explained to him her plans and asked his cooperation and help.

Due to the fact that there is only one nurse in the county and she is responsible for all maternity and infancy work, only nineteen babies were selected. Those cases not selected for the initial demonstration were put on a waiting list.

Each baby selected was given a physical examination and feeding directions and treatment outlined. It then became the nurse's duty to go into the home and explain in detail the doctor's orders and assist the mother in carrying them out. Each baby was weighed on the first visit and when the weather permitted pictures made. The essential history

of mother and baby was entered on the record together with the weight, general condition, advice and instruction.

Some time was spent in the effort to install a good routine of health habits. Weekly visits were made to check on weight, diet, general condition and to determine if advice and instruction had been implicitly followed. The doctor was kept posted as to gains or losses and advised of any unusual condition or occurrence.

These babies were particularly subject to colds and to bowel disturbance and of course easily susceptible to any acute illness. For this reason the parents were urged to keep in close touch with the physician whenever the baby did not gain or if he showed signs of illness. Many of the mothers made visits to their physicians, alternating with the visits made by the nurse to the home. Thus there was approached the ideal relationship between doctor and patient.

The physician was consulted frequently and regularly by the nurse especially at the beginning of the feeding period, and until good feeding habits were thoroughly established. His orders were not only thoroughly explained, but actually demonstrated in the home. The nurse demonstrated the preparation of simple cows milk formulae, preparation of lactic acid milk, cereal and vegetable cooking. Cod liver oil and sunshine are used for all of these babies, and where possible orange or tomato juice is given daily. Some of the parents are distressingly poor, but were selected purposely to make the demonstration economically representative. Cod liver oil and milk in some instances are being purchased on next season's crop.

On the whole, we get best results with cows milk either a simple or lactic acid formula. The lactic acid formula has some advantages. It is easily prepared, keeps better than plain milk, and seems more easily digested. Also, contrary to a general belief, we find very few babies who refuse to take it. On the other hand, they like it. In several instances the mother has told me that she had to watch the "knee baby" to keep him from stealing it. It is a good rule for the nurse to always give the baby the first feeding, whether lactic acid milk, cereal or vegetable. If the first feeding is properly given, subsequent feedings are much easier.

There has been a very satisfactory gain in this group of babies. As each infant in the group reaches the average weight line and goes a little above he will be discharged and another will take his place. There are twenty-five babies on the waiting list at present that cannot be accommodated. We find an eager desire on the part of the parents for such work and as a rule splendid cooperation.

The physicians have cooperated heartily and cordially and excellent team work between them and the county maternity and infancy nurse has made successful, and is continuing to make successful; this demonstration nutrition work which bids fair to become permanent and, certainly, to become permanent in its effect.

DISCUSSION

Miss Irene Parsons, Rockingham: Our nutritional work in Richmond County has met with great success. The doctors have been very coopera-

tive and so have the mothers. As to how to get in touch with babies, when we started this work I went around to see all the physicians and asked them whether they had undernourished babies of whom they would like me to take care. Often, when calling in the homes, they find an undernourished baby that they have not time to look after, and they call on me to see them. We took on nineteen babies in November. I went to each home, weighed the baby, and made a chart. I took that chart back to the doctor to show him and got the doctor's instructions for feeding, then went back to the home and demonstrated the feeding and fed the baby the first time. I think we get much better results from that. Often the mother will say the baby does not like the milk, and if you demonstrate the feeding you get much better cooperation. These babies are visited each week and the weight recorded on the chart. If anything occurs, we go back to the family physician. The babies are given cod liver oil and orange juice and are kept out in the sunshine. Those babies have gained anywhere from one-quarter pound to three-quarters of a pound each week. I believe that is all I want to say.

About the charts, we make pictures from time to time. The best plan is to make a picture when you first start going to see the baby, if the weather permits, and then make other pictures from time to time as the baby improves. Whenever the baby gets over this red line on the chart, it is over the normal weight. We then leave with the mother an envelope addressed to the health department and tell her if the baby gets under weight again to notify the health department. The charts are filed away in the office.

CHILD HEALTH PROGRAMS THAT ARE BRINGING RESULTS IN NORTH CAROLINA

By Theresa Dansdill, M.A.

Director of Health Education of the N. C. Tuberculosis Association.

A story in a current number of *The Saturday Evening Post* contained the following paragraph:

"Cedars rose wonderfully out of solid rock; but they were not beautiful cedars. They were gnarled, twisted, weird contortions, as if growth were torture. They were shrunken, grey, old—theirs had been a bitter fight."

Child health programs have been in successful operation long enough now that the above lines might be applied to undernourished children as well as to trees. Because nature is wonderfully kind, every undernourished child does not suffer irreparable injury. Since there is no proof positive which ones may be injured and which ones shall come through apparently unscathed, is it not well to assume that every child ten per cent or more underweight needs careful health training, guidance and instruction?

Health education is not only a preparation for future living, it is life itself, now—today as well as the years stretching ahead. With the girls and boys shall we not reckon in the present, as well as the near and the more distant future? Giving them happiness, joyful living and

a keen sense of well being every day, making them unconscious of their smoothly running bodies that their minds shall be free for the day's alloted tasks. Shall our child health programs function so well that each shall be given his chance to carry on the best he can with his allotted equipment.

The child health programs in North Carolina are varied as circumstances necessitate, but it is a joy to note that they are bringing results. They range from the ones that have sufficient personnel and funds to reach an ideal objective easily to the one that is worked out almost single handed and alone.

Winston-Salem and Forsythe County, Durham, Greensboro, and Charlotte are carrying on work—none finer in the world. Each is journeying toward the goal of child health, each traveling a different road.

Winston-Salem—Crusade director who works with the department of physical education and supervises teachers who are carrying on the Crusade in the third and fourth grades. Trained nutrition worker. Trained nursing staff.

Forsythe County—Sufficient number of nurses that each consolidated school in the county is visited by a nurse every day.

Durham—School nurses who make regular visits to the school at least once a week. The principals and teachers carry on the health program when the nurses are not there. The county works also under the direction of Dr. Epperson.

Greensboro—Staff nurses who carry on the school health program with their other district work.

Guilford County—Carries on the work through the nurses and Dr. Buie.

Raleigh—Carries on the work quite similarly to Greensboro.

Charlotte—A director of the school nurses supervises the work of the staff. She in turn reports to the general supervisor.

Asheville—For the first time this year has school nurse, supervisor with two assistants, and a full time school physician who give their entire time to work. The school supervisor is also her own supervisor.

Buncombe County—Has two county nurses who, with Dr. Morgan, are carrying on one of the finest child health programs in the state. Buncombe County has the honor of being the first county in the state to place a scale in every school. This splendid project was financed by the Christmas Seals under the chairmanship of Mrs. J. M. Gudger.

Concord—Under the direction of Dr. Buchanan, his nurses and the primary supervisor, Miss Mary King, carried on a wonderfully fine program.

Wilmington and New Hanover County carry on the program chiefly through the principals and teachers under the supervision of Dr. Hamilton and his staff.

But what of the counties who have a small staff or who have no one but the health officer to carry on?

Pitt County—Cooperative program, county nurse, home demonstration agent, rural school supervisor.

Halifax County—Health officer, nurse, supervisor, home demonstration agent.

Johnston County—Health officer, with no staff, has been able to fire his school principals and teachers to so high a degree of enthusiasm that a perfectly splendid program is in full swing there. The Crusade is in all the grade schools in the county.

Davidson County—Illustrates what a fine work can be done with a health officer and a county nurse on the job. The Crusade is in every school in the county and a definite time is given to health training every day.

Henderson County—Is an example of what can be done when the rural schools supervisor is interested in health. Dr. Woodcock began the work last fall and Miss Ila Johnson has supervised it through her school principal.

Craven County—Under Dr. Ford, works out a similar program with the rural school supervisor, Miss Hayes. Dr. Ford has been able to get valuable data from his examinations that have proved almost invaluable in helping him to give definite diagnoses.

Lenoir County—Under Dr. McGeachy and his school nurses, chose a limited number of schools in which to carry on the work. These schools are visited regularly, definite instruction in health habit formation is given, and a check is kept of the teachers' work in health education.

Wilson County—has a scale in every school purchased with Christmas Seal funds. The Crusade is in all the schools. It is supervised by Miss Martha Newman and carried on daily under the direction of the principals and teachers.

The work in the other counties in the State is similar to or modified from the ones mentioned. What are the goals for the coming year?

1. Present the child health program plans at the first general teachers meeting in the fall.

(a)—A definite place on the daily school program for health training at least in the six lower grades.

(b)—A scale in every school with regular weighing of all the children preferably once a month, a minimum of three times a year—the first month of school, mid-year, and the last month.

(c)—Classifying the children according to percentage of underweight giving especial attention to the ones ten per cent or more underweight.

(d)—A medical and physical examination preferably of all the children, but at least of the ones ten per cent or more underweight.

(e)—A children's tuberculosis clinic.

2. Doing the best we can with the materials at hand, striving always for a wee bit higher plane—these will bring laughter to the faces, singing to the hearts of little children.

"It is not in the actual loss of life that we see the greatest drain on the community, it is in the army of children, of young people and adults who lead stunted, painful lives."

Transforming just one little pale youngster into a joyously healthy, rollicking child is worth all the work of the year.

DISCUSSION

Dr. R. L. Carlton, City Health Officer, Winston-Salem: I want to thank Miss Dansdill for that most excellent talk, and I think a vote of congratulation is due the State of North Carolina that the North Carolina Tuberculosis Association has made possible the services of Miss Dansdill in the work she is doing. I come in contact with her work occasionally, and it is most excellent work.

I want to emphasize a few of the points which Miss Dansdill has made, the first of which is that there be a definite place in the daily program for the teaching of health. If you can not get ten minutes a day, if it is only five, get that definite time each day. We have been fortunate enough in Winston-Salem to get a few minutes each day.

The next point is the physical examination of children who need it—those who are a great deal underweight and who do not come up. Whoever discovers that, nutrition worker or teacher or anyone else, should get that child examined.

I thoroughly agree that there should be a joint program of the two pieces of work, nutrition program and a child health education. Where it is possible to have two workers of course it is a good thing. A point is that it is a perfectly legitimate place for the expenditure of Tuberculosis Christmas Seal funds. A splendid way to raise funds is to have the children present plays and dramas. We had in Winston-Salem a pageant in the community auditorium in which each agency represented in the Community Chest fund had one act in which its work was demonstrated. That made a big hit. One of the best parts was the act demonstrating the work of the Modern Health Crusade. After that there was not the slightest doubt about getting that represented in the Community Chest. The children themselves are the biggest appeal when you go out for funds for nutrition work or tuberculosis work. I know that is true in my city, at least. We are getting $8,000 for tuberculosis work and $5,000 for nutrition work, and it is the children that did it.

Dr. L. B. McBrayer, Director, N. C. Tuberculosis Association, Southern Pines: I want to say just a word or two and then give the rest of my time to Dr. Epperson, who has some things that will fit in. In working out this educational program it is necessary to look all the way through, and one important thing must be taken into consideration. That thing is the cooperation of the colleges. Before Miss Dansdill came with the North Carolina Tuberculosis Association we had her for one summer, and she spent one or two days at each of the summer schools of the state. She was well received, and since she has been with us she has been spending her summers in the summer schools, and last year at the invitation of Duke University she gave a full course for one semester and is going to do that again this year. Eventually, and the sooner the better, health education must have a specific place in the curriculum of every college, so that our teachers will be well informed on this subject. I shall let Dr. Epperson have the rest of my time.

Miss Dansdill, closing the discussion: I might say to Dr. Branch that the reason I did not mention the dental clinic is because it is only part of the health program. But it is a most essential part, and I think if every

county in the state had a Dr. Branch we should have an irreducible minimum in every county.

I have nothing to say in closing except the hope that this year will be finer and better than any year we have ever had in North Carolina. I shall close with one little verse.

"How great is that which we shall build?
No greater than our dreams are great,
No higher than our hopes are high."

OUR MUTUAL OBLIGATION

By Eugene B. Hoyle, M.D., D.D.S., Raleigh.

In 1891, Dr. W. D. Miller, an American dentist, professor in the University of Berlin, called attention to the mouth as a focus of infection. During several years which followed, especially in 1910 Dr. William Hunter, a physician of Liverpool, England, enlarged on this subject in such drastic and forcible manner as to arouse the interest of both the medical and dental professions.

Since that time a tremendous amount of research along this line has been done, and resultant literature has flooded both professions, bringing forth many facts both experimentally and clinically, but we are still far from a solution of this vexing problem.

In the oral cavity, there are two main areas which may act as primary foci, from which, we believe, infection may be carried into the blood stream; fiirst, the supporting periodontal tissues; second, the periapical area which itself becomes infected through the pulp canal. Most of the literature on this subject has been confined to the latter. We feel that the former has not received the attention to which, by reason of its importance, it is entitled.

PERIODONTAL LESIONS

A few years ago we were taught in the schools that pyorrhoea was a disease of the alaveolar process manifested by swollen gums, receding alveolus and a flowing of pus. This error has probably caused the loss of more teeth than all other causes combined. As to the amount of systemic disturbance attributable to this cause, it is not possible for us to make an estimation.

There is no such thing as pyorrhoea alveolaris. The name is a misnomer, and no longer used by students of periodontal lesions.

Frequently in early childhood, though generally somewhat later, a gelatinous plaque of mucin may be found adhering to the surface of the neck of a tooth just under the free margin of the gum. In this plaque bacteria become enmeshed, and lime salts from the saliva deposited. When this process has advanced sufficiently, both the toxins of the bacteria and the mechanical irritation of the tartar bring about a slight amount of inflammation in the over-hanging gum tissues. From these inflamed tissues serum oozes out into the space between the tooth and the free margin of the gum; from this serum lime salts in the form of hemotogenous calculus are precipitated and deposited on the neck of the tooth. Thus, we see a vicious cycle has been completed.

The more tartar—the more inflammation
The more inflammation—the more serum
The more serum—the more tartar.

And so we note in the patient's mouth, first, a slight reddening of the gums, and on minute instrumental examination we find a very slight deposit of tartar underneath the free margin of the gum not visible above it. This is Riggs Disease—periodontoclasia. Later on we find the gums quite red, and swollen, and the tartar on examination apparent to the eye. The process continues and finally the alveolus gives way to the onslaught of bacterial toxins and mechanical advance of the deposit, and when sufficient absorption of the alveolus has taken place a "pocket" is formed between the tooth and the unsupported gum tissue about it. Still later, (perhaps eight years, ten years, fifteen years after the initial lesion) these pockets become the seat of a secondary infection, and pus begins to flow. This is not pyorhoea; it is the last stage of Riggs Disease or periodontoclasia.

Now, bear in mind that during all these years the periodontal tissues have been teeming with bacteria; their toxins have been taken up and carried away by the blood. There is an effort, to be sure, on the part of nature to cut off this area by the formation of a fibrous wall, but seldom does this wall appear sufficient to accomplish its purpose. So we find about each tooth an area of infection from two to ten times as great as the area at the apex of a pulpless tooth. Consider then the result of having fifteen to thirty such infected teeth.

The policy of the dental profession to recognize Riggs Disease, alias pyorrhoea, only after the beginning of the flow of pus has caused the loss of countless millions of teeth, and untold suffering from absorbed toxins and secondary disease caused by bacteria which have been carried away by the blood stream and lodged in other organs.

The public must know the significance of the little red line. It is our mutual obligation to teach them.

In regard to the pulpless tooth, in spite of the unlimited amount of research and untold reams of literature, the solution so far as the general practitioner is concerned, is very obscure. The dental profession is displaying a tendency to take out less teeth. Whether this has been brought about by a clinical study of results obtained, or whether it is just a reaction from the stampede toward wholesale extraction, I am unable to say.

We know that ninety per cent or more of pulpless teeth are infected with some strain of streptococcus; we know that nature attempts to wall this infection off by the formation of a fibrous sac about the apex of the tooth; we know that frequently this effort is ineffectual, and that in these cases bacteria are to be found in the tissues about the apex; we know that sometimes an effectual quarantine is established, and that in these cases not only do we not find bacteria in the tissues about the apex, but so high is the efficiency of this protecting wall that if a piece of it be cut away and dropped on a culture of streptococcus, the bacteria will be destroyed for a distance of several centimeters around; but, on the other hand, we know that even after the infection has been com-

pletely cut off by a protecting wall that in case of lowered resistance this wall may degenerate and become ineffective.

It would appear that we are justified in extracting teeth which if allowed to remain present a condition of potential danger, which is held in check only by the resistance of the patient.

However, when we look further we find that approximately fifty per cent of live teeth are infected. This does not mean that all of these teeth have exposed nerves. It has been definitely shown that the tubules of the dentine are larger than the bacteria, and that infection of pulp can and does take place before the pulp is exposed. If we would then extract all infected teeth, where shall the process end.

It is possible that a solution may present itself; it is possible that many solutions may appear; the most logical solution to my mind is to forestall and prevent the pulpless tooth. This can be done only by a closer cooperation between physicians and dentists in recognizing certain conditions which exist, in instituting corrective measures at the proper time. which measures can be carried out only by the education of the public.

Dr. Percy R. Howe of Forsythe Dental Infirmary in Boston, Mass., has shown by experiments in a manner acceptable to the dental profession, that caries can be produced in the teeth of guinea pigs, fed on diet which previous experiments had shown would produce the scorbutic condition. It is interesting to know that the first change in any osseous structure in animals killed at various stages of this experiment appeared in the incisor teeth as evidenced by changes in the formation of dentine and in the layer of odontoblasts. These changes would appear in from six to seven days, and would progress if the diet were continued. However, by administration of orange juice the damage could be corrected in forty-eight hours.

Dr. Howe has not been able to demonstrate deficiencies in calcification in the teeth of a foetus by administration of deficient diet to expectant mothers—a fact which, it appears to me, is easily understood since in all probability nature supplies the needs of the growing foetus at the expense of the mother and this is possibly the reason why the teeth of so many young mothers present an alarming state of decalcification.

Thus, we feel that the first step in the prevention of the pulpless tooth would be regulation of diet—the establishment of a balanced diet for the expectant mother before calcification of osseous tissues begin in the foetus; establishment of proper diet as varying conditions demand in the growing child.

The second great step in abolishing the pulpless tooth is the teaching of oral hygiene through community organizations and in the public schools. The State Board of Health has been doing some excellent work along this line—all that could possibly be asked when we consider the small amount of financial backing which is at their disposal.

But more must be done, and already a plan is on foot.

At the instigation of Dr. E. G. Tucker, dental member of the State Board of Health, Secretary Laughinghouse has suggested that a committee be appointed by the North Carolina Dental Society to confer with said Board of Health, with a view to establishing a course in oral

hygiene in all the teacher training schools in the State. This committee has been appointed. The move has been endorsed by the State Superintendent of Public Instruction. I have no doubt but that these courses will soon be instituted. It is then only a step to establish oral hygiene in the curriculum of every public school in the State.

Gentlemen, it is our mutual obligation to cooperate to the fullest extent to the end, first, that we may establish and maintain proper diet, second, that we may preach the gospel of sound teeth and healthy gums.

DISCUSSION

Dr. E. A. Branch, Wake County Health Department, Raleigh: Mr. President, ladies and gentlemen—I might say missionaries of good health to the State of North Carolina:

While Miss Dansdill and Dr. Carlton were talking just now about the great importance of a health program in the schools of North Carolina, if they had just said a dental health program then it would not be necessary for me to say anything at all. In talking to the children I try to put the text on the board, and the text is the same every time we preach. It is: "The mouth is the gateway of the body. Keep it clean." If we can keep clean the mouths of the children in the schools of North Carolina then in a great way we have answered the problem of Miss Dansdill over here, and in just that far have we solved the problem and gotten these wonderful results that she has shown. The mouth is the gateway of the body, and it must be clean. Now, to do that we must have oral hygiene spread from the east to the west; and it has been suggested more times than one, and especially during the meeting of the Legislature, that we endeavor to have some legislation of one form or another passed requiring oral hygiene to be taught in the schools. I said: "Let's not go at it in that way, because the teachers of the state have so much required of them now that I am afraid they will naturally rebel if we require anything more." But if we go before the teachers, especially in the teacher-training schools of the state (and what I am having to say about oral hygiene or dental health is just as true of the greater health program which takes in the entire body and in which you gentlemen are interested) if we will go before these teachers and show them the need of clean mouths and let them just once realize the tremendous responsibility and the wonderful opportunity they have of being true missionaries and guardians of the health of these children, they will seize this opportunity eagerly and will enter into this work whole-heartedly; and then it is we shall spread dental education all over the state. Now, to do that we must get at the teachers, and the best place is in the teacher-training schools. To do that we must get at the mothers, and the best place to get at the mothers is through the parent-teacher associations. To do that we must get at the dentists, because they need to be taught the great importance of clean mouths just as much as anyone else. To do that we must get the physicians of the State, because they need it; and today a man can not practice medicine in an effective way if he has to deal with a patient who has a filthy mouth. We have to deal with the physicians; and to do that, gentlemen, as guardians of the health of North

Carolina and as health missionaries to the State, we must appeal to you as health officers. There is nothing I know of at all that will further the cause and enable you to arrive at the results for which you are striving more than clean mouths. I do not know anything that is doing more harm than the disease usually termed Riggs' disease, which Dr. Howle discussed just now. It is appalling to see how many young children have Riggs' disease—not in its incipiency, not in the stage of the red line and quitting there, but in the advanced stages—children not more than twelve or thirteen years of age. Fifty or even seventy-five per cent of women who are mothers and have reached the age of thirty-five years have Riggs' disease in greater or less degree. Three-fourths of them have it. Those are the conditions we contend with, and they do not know it; they think the gums are just a little sore. We have to teach people that this is a serious thing and that it has to be corrected, and the way to correct it is to start with the children and teach them to keep their mouths clean throughout life.

Dr. R. L. Carlton, City Health Officer, Winston-Salem: I should like to say, for the benefit of Dr. Branch, that Winston-Salem has a dental clinic functioning twelve months in the year.

POSSIBILITIES FOR THE CONSERVATION OF INFANT LIFE BY A WELL ORGANIZED MATERNITY AND INFANCY UNIT

By J. H. Epperson, Superintendent of Health, Durham.

"In the beginning, God created the heavens and the earth and the earth was without form and void and darkness was upon the face of the deep, and the spirit of God moved upon the face of the waters and God said let there be light, and there was light." With the coming of light we are taught to believe that there also came into being some form and type of life. Whether the type of life which existed in these prehistoric days was in the form of a ball of protoplasmic material or of unicellular character in design matters not. We do know, however, that man has been in existence upon the face of this earth for periods of time in advance of any written record. As far back as one may care to search the records there is certain specific evidence of that thing, or condition of being, called "instinct." Instinct is said to cause some of the lowest forms of animal life to do certain things by way of perpetuating their offspring from generation to generation. The human race was not overlooked by the Great Creator in installing this characteristic. Probably before the mind of man began to function to any great degree there was that "something" which provided parental care which perpetuated the species and has safely brought us through the various ages of development down to that period of time in the existence of the human race where the mind begins to function in the direction of further self preservation and the preservation of our offspring.

When we pause for a moment for serious reflection we must necessarily admit that we are not so far removed from that time when the future destiny of the human race was governed largely by instinct. In fact, if we believe history, we are still living in an age where, in certain

parts of the world, civilization is at a very low ebb, particularly with regard to the prolongation of human existence. In our own existence, however, we find that we have progressed to that point where we are beginning to take stock of the number of days of our worldly existence, and by serious study, observation and scientific investigation, attempt to prolong life, so that we may reach that Biblical span of three score and ten.

In this connection we are constantly being reminded by certain well established statistical agencies that the span of human existence is being extended. Extended largely by the lessening of the infant death rate. We are reminded that in the past twenty-five years the span of life has been lengthened more than in any other similar period in history. What the next similar period of time will bring is a matter of speculation, but from the information at hand and the constant progress which is being made in preventive medicine, we may well hope to see the span of life lengthened beyond our fondest expectations.

The economic world is fast coming to realize that the preservation of human life through the establishment of properly organized and adequately financed health agencies is a necessity and not a passing fancy of a certain group of misguided individuals. The Supreme Court of the State of Illinois in a decision recently handed down has had the following to say: "The health of the people is unquestionably an economic asset and social blessing, and the science of public health is therefore of great importance. Public health measures have long been recognized and used, but the science of public health is of recent origin, and with the advance of the science, methods have been greatly altered. The results to be obtained by scientific health regulations are well illustrated by the remarkable changes made in health conditions throughout the length and breadth of our land. That the preservation of the public health is one of the duties devolving upon the state as a sovereign power will not be questioned." With a statement of this character coming from one of the high tribunals of the land, does it not therefore behoove us to gird our loins for the fray and place our respective organizations on the business basis which the economic world expects and has the right to demand. Business men think in terms of dollars and cents and they, therefore, expect of us as health officials to place before them our proposed programs of endeavor in such a manner that they may be justified from the financial point of view as well as from the humanitarian one. We must necessarily show the existing conditions in their true light, the material improvement which has been made as a result of expenditures and the necessity for additional expenditures before we may expect an attentive ear and an open purse.

Within every health organization there are various and sundry problems to deal with pertaining to the preservation of the community health. Certain communities due to their geographical location have health menaces which other communities do not have. But there is one problem which is common wherever health agencies exist, and that is the problem of conserving infant life.

Within recent years among the specific problems that have occupied the attention of sanitarians, with few have they coped more successfully,

than those associated with the excess of infant mortality. In our own great State the machinery of infant welfare work has been extensively developed and standardized in the more progressive communities. It has come to pass that the saving of infant lives is generally proportional to the sum of money available to the public and private welfare agencies concerned with the longevity of infants.

Programs of activity for the control of infant mortality has not been without its critics. Its indictment at the hands of certain individuals has been based upon the allegation that infant welfare work operates to preserve the unfit, to preserve those who in the normal course of events succumb to the decimating influences of the ruthless forces of natural selection. The artificial reduction of infant mortality has been branded with the stigma of a misdirected humanitarianism. These same critics grew red in the face, arguing that infant welfare work would result in race suicide. They contended that the infants that die, are the weaklings who ought to be permitted to die. Only the strong should be kept alive to grow and propagate their kind.

Health and welfare organizations engaged in programs of infant welfare work began to take stock of these statements in order that they might determine and prove to their own satisfaction that their efforts were not in the direction of preserving the "unfit." This they did in no uncertain manner and to the entire satisfaction of all who are directing their efforts toward the reduction of infant mortality. It only requires the use of a bit of higher mathematics and a little common sense if you have available birth and death records over a given period of time.

If you will pardon personal reference in this connection, I will endeavor to give you a few convincing figures showing conclusively the results of infant welfare work in my county and that the program has not worked to preserve the unfit but has preserved the fitness of the fit. For the six year period beginning January 1, 1918, and ending December 31, 1923, there was reported 7,194 births and a total of 805 deaths under one year of age. The average number of births per year during this period was 1,200. The average number of deaths under one year during the same period of time was 134. The average number of deaths under one year of age during this period of time was 112 per one thousand live births. The maximum rate during this six year period was 143.7 deaths for each 1,000 live births. During this period of time no special effort was made on the part of the health department toward the conservation of infant life other than the regular routine work which incidentally, of course, was of some benefit.

Beginning January 1, 1924, and ending December 31, 1926, an intensive program of infant welfare work has been carried on. During this three-year period 4,555 births have been reported; 444 deaths under one year of age have occurred. The average number of births for this three-year period has been 1,518. The average number of deaths has been 148. The average number of deaths under one year of age per thousand live births during this period has been reduced to ninety-seven. The minimum mortality rate for the last year in this period of three years is 95.0.

By way of comparison of the pre-program period with the post-program period the following tabulations are interesting: The maximum infant mortality rate for any one year during the pre-period was 143.7 while the rate for any one year during the post period was 95.0. If the same infant mortality rate had prevailed in the pre-period as prevailed in the post period, instead of having an average number of deaths of 134 we would have had only 116 or to be more exact for the six year period we would have had 696 deaths instead of 805. Therefore it is evident that 109 infants met an untimely death. On the other hand if the pre-period rate prevailed during the three years since the establishment of the intensive program there would have been an average of 170 infant deaths per year instead of 148.

In a further study of deaths by age groups over this period of years it is comparatively an easy matter to prove beyond a shadow of a doubt that for approximately every ten infants that are preserved by health methods and who would otherwise have died, there are equally half this number who are preserved in the second year of life, two in the third, one in the fourth and so on up the scale of life expectancy. It is reasonable to believe that the reasons for the savings in the latter years of life is due to the fact that when the number of cases of fatal illness is reduced, likewise the number of cases of non-fatal but damaging sickness is also reduced. We know that the damaging sickness of infancy may not kill the young child, but it materially reduces his resistance to disease so that he is more likely to die prematurely in the second, third or later years of life.

It is presumed that you are interested in knowing something of the cost of the services rendered in this program of endeavor and also to have a general insight into the character of the work as it has been conducted. As previously mentioned the work was undertaken with the beginning of the year 1924 with one nurse being placed in the field working on the specialized plan. Prior to this period of time our well baby clinics had been operated on a limited scale but with the inception of the Maternity and Infancy program, renewed effort was put forth to build up these clinics. During the three year period that this work has been under way, 4,555 births have occurred within the County as a whole and 8,845 baby visits have been recorded by the several clinics conducted during this period of time. You will note that there has been approximately two clinic visits for each birth which has occurred. Of course it is understood that in many instances the same baby is brought to the clinic a number of times. Along with the clinic work the two nurses which are now devoting their whole time to this service have made 11,102 nursing visits and have visited 1,262 separate and distinct prenatal cases.

The cost of the paid service in connection with this program has amounted to $8,900.00 for the three years work. One nurse has been engaged in the work for a period of two years and two nurses for a period of one year making a total of forty-eight months of nursing service at a total cost of $7,450.00. During the three year period $1,450.00 has been appropriated for the service of a clinic physician but due to the fact that the major portion of this service has been voluntary on the part of

the local physicians, a considerable portion of this appropriation has been used in other phases of the program. The total appropriation of $8,900.00 has been obtained through a cooperative contract with the N. C. State Board of Health whereby the County appropriates a certain amount of money and the State supplements the amount in keeping with their stated allowance for each County unit.

The possibilities for the conservation of infant life by a well organized Maternity and Infancy Unit have practically no limitations. It matters not whether nursing service in connection therewith is operated on the general or specialized plan. In the first place it is extremely necessary that a comprehensive analysis of the cause of infant deaths be determined from time to time. If babies are dying from diarrhoea and enteritis there is a cause. There also is a remedy. It may be ignorance on the part of the mother relative to the character of the diet. It may be a rotten milk supply or it may be filthy and insanitary living conditions or a dozen and one other things. If you have a large negro population as we have in this County it is undoubtedly well known to you what health hazards surround the negro infant. Twenty to twenty-five per cent born out of wedlock. Willful neglect, gross ignorance, venereal diseases and what not. And last but not least the lack of medical attention. These problems all have a solution but before they can be solved there must be adequate appropriations of money. Money which comes out of the tax payers pockets, appropriated by the guardians of the public treasury, and you well know what this means. It means cold blooded facts in regard to existing conditions backed up by definite results from money previously spent. This and nothing more. After money comes effort, patience, expert skill and judgment, properly trained personnel and cooperative assistance on the part of private community agencies. And in the end, the balancing of the health ledger. If you can't show a profit by way of reduction of the infant mortality rate, you had better close up the shop and take an inventory.

Of all the various and sundry problems with which a health agency has to deal, it appears to me that there is none existing which should require any closer cooperation on the part of the practitioner of medicine and the health department than this. The one is dependent upon the other. One need not in the least conflict with the other. How often do we find the prenatal case without medical supervision? Yes, the doctor has been engaged, it is found upon inquiry, but for some reason he has not been summoned. The nurse's visit usually brings the physician in the case. In another instance it is found that an infant is sorely in need of medical attention, but for some reason best known to the mother, or the grandmother or possibly Aunt Sally or Uncle Peter the physician is not called. He may be called as a result of the nurse's visit. If he is not called an effort is made to get the baby to the nearest clinic, particularly if it is a case of neglect or improper feeding. In still another instance the physician reports a list of pre-natal cases to the health department with the instruction that the nurses visit these cases at periodic intervals, secure urine specimens and make certain routine observations and report their findings to him. This is a distinct and beneficial service to the patient, to the doctor and to the community.

In conclusion I wish to emphatically state that I know of no better service which a health organization can render the community than to establish infant welfare work within its ranks in such a manner that the fitness of the fit will be preserved, that parenthood may be a thing to be desired and that untimely infant deaths be reduced to the lowest possible minimum. May we who have been chosen to carry the banner at the head of our respective organizations long remember that old and timely adage that "as the twig is bent so is the tree inclined."

DISCUSSION

Dr. George Collins, State Board of Health, Raleigh: I don't know whether or not there has been a more significant paper than this presented before the North Carolina Public Health Association since its organization; I do not believe there has been since I have been attending. I think Dr. Epperson may well report to his board, with reference to this particular matter, "I came; I saw; I conquered." He has not told you what you ought to do or what he expects to do but what he has done. I think he is a little too modest to go into detail as to how he has accomplished it. I am frank to say I do not know how he accomplished it, but it was accomplished by a definite, specific plan scientifically executed. He inaugurated this plan by studying the particular problem involved, and he took measures accordingly. Dr. Epperson said, "Take an inventory"; and I think that was a very significant statement. I think you will not get very far in the solution of your problems in maternal and infant death rates until you take an inventory to find out where you are, and if you do not know where you are I do not see how you can tell where you will arrive. One of the most convenient methods in trying to determine where you are with reference to maternal and infant mortality is by statistics. Some people, of course, will say you are lying if you offer statistics. But let us analyze just for a minute. I am going to raise a few questions and then beat a hasty retreat.

The first thing I wish to mention is that in the five years 1921-1925, inclusive, the average number of deaths under one year of age was 6,735. Of these infants 3,367, or more than half, died under one month of age. Now, what possibly might be your problem there? It strikes me as a concentration on the first few days and the first few weeks of infant life.

Again, there were 4,000 stillbirths. What does that mean? I am not prepared to say right now.

Let us go a little bit further. During the second year, from one year to two years of age, the infant mortality drops down to 1,530. That is not surprising, but it is significant. In the first month there were 3,367 deaths; in the second month there are only 630. Again you get right back to that first month.

I wish to mention just a few other figures, and then I shall quit. I want to suggest to you the idea of not only a quantitative analysis of statistics such as I have given you here in these figures but a qualitative analysis of statistics. What do I mean by that? Just this. Here, for instance, are 1,475 deaths from diarrhea and enteritis. That is pretty significant, too. What I mean by qualitative analysis is to go to work and

try to determine whether a rotten milk supply or an excessive number of artificially fed babies or what not may be instrumental in producing your high death rate from diarrhea and enteritis.

We have in this State an average, over the five-year period again, of 252 deaths from puerperal septicemia and toxemia. While some people say you will not get very far with prenatal work, it strikes me there is a mighty good chance to try to do something. It is a rather unique fact that throughout the whole registration area of the United States puerperal septicemia I think comes first as the cause of deaths in the puerperal state and accidents, I think, second. But in North Carolina that is reversed; in North Carolina toxemia leads all other causes. The total number of maternal deaths throughout the state was 584, from all causes. Toxemias accounted for 252 out of the 584.

Let us go a little further. During the five-year period there was an average of 1,853 deaths that are accounted for by injury at birth and premature birth. If you connect up these figures with the 4,000 stillbirths and if you analyze qualitatively your own statistics in your own town, in your own backyard, you might ask yourself the question as to what bearing syphilis has on this large number of stillbirths.

The point I am trying to get at is that in attacking this whole problem of maternal and infant mortality you must realize it is a definite, specific problem, requiring definite, specific measures, requiring specialized effort; I do not mean through specialized nurses, necessarily; but it must be specialized effort through a generalized program. I do not believe we shall make much headway in reducing maternal mortality by purely educational procedures, through a generalized program, under three generations. It will be mighty slow, because a certain percentage gets it this generation, a certain percentage in the next generation, and a certain percentage in the third. It requires a quantitative and qualitative analysis of statistics on mortality and morbidity rates and then definite and specific effort to solve the problem.

Dr. J. M. Northington, Charlotte: I am extremely interested in this matter of maternal mortality. This State boasts loudly of its great material development; it says that it pays into the Federal treasury more taxes than any other state except two or three or four and that it has more hard-surfaced roads than any other state in the South and most of the other states in the Union. It has something else among its firsts or near firsts of which it has no reason to be proud, and that is its maternal death rate. Two years ago, at Pinehurst, Dr. George H. Ross of this city, in his chairman's address before the section on obstetrics, gave out some figures which so far as I know have not been refuted. They were startling. He said that not only has North Carolina one of the highest maternal death rates of any state in the Union but incidentally it is true that these United States have one of the highest of any civilized country. A woman who wants to bear a child for her own pleasure, as the gratification of her maternal instincts, or as a patriotic duty, had better go to Italy. We commonly call Italians wops or guineas. Let us see what the records are. She has less than half the chance of losing her life in Italy that she has in North Carolina. The same is true of

Japan, of Finland, of Uruguay, down in South America, which is little more than a name to many of us. A short time ago I called attention to those facts in *Southern Medicine and Surgery.* I sent a copy of that issue to every man practicing medicine in North Carolina who alleges that he shows even the slightest interest in obstetrics, as shown by the directory of the American Medical Association, and I got an answer from one. It is a little startling that there should be such lethargy on such a subject. The two conditions which bring death to such a large number of persons and which are causing an increased percentage of deaths are childbirth and cancer. Not only the Journal of the American Medical Association but many other medical journals and lay magazines are full of articles about cancer, but how rarely do you see anything about the expectant mother! Very rarely indeed. Yet you would naturally infer, if there is any chivalry in the world, that we would be more concerned with the expectant mother; also from an economic standpoint, for those who die from cancer are usually advanced in life and are generally of little use to the State or to the family. The young woman who is approaching labor is of tremendous worth to the State; she has demonstrated her willingness and her ability to produce offspring; and how much care is taken of her? It is astounding to think of it. In 1798 the maternal death rate in Manchester, England, was one-third what it is in North Carolina today. Is that progress? Is that something to boast about? What is the answer? I do not know what the answer is, but I believe I know. Very recently an important report came out from the Henry Ford Hospital in Detroit on the management of labor cases for five years. The whole burden of the song was noninterference. They said perfectly flatly that in vertex presentations they regard one position or the other with equal indifference; if it is a posterior, let it alone; if it is an anterior, let it alone. The whole idea was that unless you can demonstrate clearly that it is an impossible delivery, do not meddle. The old phrase, "meddlesome midwifery," is applicable. I thoroughly believe it was an unfortunate day for women when pituitrin was discovered, and I think it was equally unfortunate when forceps were invented. In the counties in which the largest proportion of the children that came into the world were born of mothers that did not have the attendance of doctors there was the largest proportion of survival of the mothers; and, on the other hand, the counties in which the largest proportion of deliveries were in the hands of doctors were the counties which showed the largest percentage of maternal mortality. This is unpleasant; it is humiliating; but it is a fact. Now, a rule can be laid down which I believe will save many a woman's life, a woman who is necessary to her husband, to her children, to her community and to her state,—that every doctor when he attends a woman in confinement shall never give her a dose of pituitrin, shall never apply forceps or do anything to economize his time, in order that he may get back home or even that he may attend another case of labor; but that he shall apply these things only for the patient's good and not for his own convenience.

Dr. R. L. Felts, Durham: I should like to answer the question which was asked a few minutes ago as to how Dr. Epperson accomplished

this work. I think the success of any health program depends upon the hearty cooperation of the medical profession in the county, and I think I can say for the medical profession of Durham that Dr. Epperson has had almost the whole-hearted support of the medical profession in his program.

COUNTY-WIDE MALARIA SURVEYS

A rapid method for establishing the presence and estimating the Public Health importance of Malaria in a county.

By Paul S. Carley, M.D., International Health Board.

The recognition of malaria and the definition of the malaria problem in any community are procedures that fall within the duties of the County Health Officer. The need is obvious for a fairly definite program which, when carried out by the Health Officer, will give results upon which may be based conclusions concerning the importance of that disease in a county.

At the outset it is essential that any proposed method must be one that can be used and applied by any Health Officer during the discharge of his manifold duties. It should be one which can be repeated at a later date and give results that will both serve as a check on the original survey and point out what progress, if any, is being made.

EQUIPMENT

Very little special equipment is necessary for the type of survey which is about to be described. A county map of some sort is indispensable. Such a map can usually be obtained from the county engineer, and as a last resort when no special map is available, an enlargement may be made, with a pantograph, from a state map. Some form of record should be kept. A large bound ledger serves as well as any record form. A more elaborate punch card record has been devised by Boyd, and is very useful especially when large numbers of examinations are made. It is our present policy to use two cards, one for the results of the examination and one for the results of history inquiry. A specimen of each is shown. Microscopic slides, a needle, alcohol, cotton and a grease pencil make up the rest of the requirements.

The result of a survey will depend to some extent upon the time of year that the survey is carried out. When there is an opportunity for choosing the season for the work, the autumn months offer the best chance for good results. The survey may, however, be carried out at any time of the year.

We may divide the proposed operation into three parts. First; the collection of information already at hand, pertinent to malaria in the county; second, field work of the survey and third, the analysis of the results of the field work.

COLLECTION OF INFORMATION

Under this heading comes the collection of information already at hand as to the present and past status of malaria in the county. I do not see how we can disregard this, as it is the only process by which an

idea can be got of the past history of the disease in the community in question. The most common sources of this information are from the reports of the disease made to the State Board of Health, in states where the disease is reportable, and consultation with the local doctors. It is well to gain this information before field work is started.

FIELD WORK OF THE SURVEY

With some idea in mind as to the parts of the county where malaria is prevalent, if this information can be had, the actual field work of the survey may be started. It is well to bear in mind that the information collected from the reports of the disease and from consultation with the local doctors is not always infallible, and one should be open to conviction from the later results of the survey even if these results be against opinions obtained from any other source. One should be on the lookout for undiscovered centers of the disease, and should above all bear in mind that in the United States malaria is definitely a focal disease in its distribution, and that the malaria picture can and does vary greatly within five mile limits. Finally, it should not be lost sight of that, though it is generally considered a rural disease, there are disconcerting examples of overlooked urban malaria.

Assuming that one has chosen the autumn months for the survey, the first step is to obtain a list of the county schools and locate them on the map. Plans should be made to visit as many schools as possible.

It is felt that sufficient information will be gained from the examination of school boys up to sixteen years of age. There are three lines along which pertinent information may be got from this group. First; by examination for palpable splenic enlargement; second; by examination of the peripheral blood for parasites and third; by inquiry as to the history of chills and fever.

SPLEEN EXAMINATION

This method has been greatly stressed in America by Darling, Boyd and others. Briefly the method consists in the palpation of the bare abdomen for enlargement of the spleen. The specific technique used in carrying out the examination does not matter greatly so long as the examiner uses the same method in every case. The method now being used is to place the examinee on his back on a table, have him draw his knees up, place his hands at his sides and stand at his right. The bare abdomen is palpated with the finger tips of the right hand under the left costal margin. If there is no palpable tumor the examinee is asked to take a fairly deep breath and gentle pressure is made on the abdomen just below the costal margin with the finger tips of the right hand, at the beginning of expiration. Two points should be borne in mind in interpreting the findings. First; the spleen is either palpable or not palpable and where there is any doubt in the mind of the examiner the only interpretation is an inpalpable spleen. (In other words a questionable spleen is a negative spleen.) Second; the lighter the pressure made by the palpating fingers, the greater the chance of feeling the spleen.

There is a series of conditions which vitiate for the time being the results of splenic examinations. The occurrence within the previous six

weeks of an outbreak of any of the acute exanthemata, mumps, whooping cough or influenza will give a sufficient number of palpable non-malarious spleens to annul the results of the examination. These spleens usually disappear within six weeks and the survey can usually be postponed that long in the school so infected.

The positive results in examination may be recorded in any manner that suits the examiner. An excellent classification of enlarged spleens is that proposed by Boyd and is as follows:

0—Not palpable
I—Palpable on inspiration
II—Enlarged below the costal margin to one half the distance to the umbilicus
III—From the lower border of II to a line level with the umbilicus
IV—Larger than III

At the time of the examination the location of the residence of the positive cases may be spotted on the map. It is usually sufficient to question the child and get from him the location of his home.

BLOOD EXAMINATION

The result obtained from the examination of the peripheral blood will depend to a great extent upon the season in which the film is taken. The routine taking of blood smears in every case is, unless outside agencies for their interpretation are available, a too prolonged procedure for use in such a survey as this. It is our present practice to take blood film from cases showing palpable splenic tumor. In Pitt County in December, 1926, and January, 1927, in 286 examinations ten per cent of the cases showing splenomegaly showed parasites in the blood, while less than one per cent of the control cases (those with negative spleens) showed parasites. Thick films offer a more rapid, but not quite so accurate method of diagnosis. In general the question of the use of blood film must be left to the discretion of the examiner.

HISTORY INDEX

The approximation of the history index to the true state of affairs will depend largely upon the method of taking the index. Much has been said and written for and against the history index as a guide to the accuracy of the other method employed in a survey. The fact remains that it is the only means that we have for getting an idea of the former state of affairs in regard to malaria in any community. A method which has been tried out and found fairly satisfactory in our hands is the use of the history sheet like the one shown here. This sheet is sent home from school by the boy examined and the parents give him the desired information. This method, it is true, is very impersonal but it is doubted very much if there can be sufficient malaria to be a real problem without some reflection in an estimate made by this method.

The exact routine to be carried out is as follows: Obtain a map, spot all schools, visit as many as possible, examine boys below sixteen years of age for splenomegaly, take blood films as indicated, distribute history

cards. Return at some later date to collect history cards, or arrange at first visit for their transmittal to headquarters.

In passing there is another approach to the problem that has at one time or another received some attention. I refer to the checking up at the drug store on the sale of quinine. It should be remembered that in the South, people take quinine for any sickness associated with fever and for a wide variety of other ailments, ranging from amenorrhea to rheumatism.

In summing up, then, the spleen index with the reservations noted, stands out as the most rapid and most applicable method that we have in making our estimate. Blood smears, while very helpful, vary so much according to the season in which they are made and add so to the time required for the survey that their widespread use is almost impossible.

Histories are very valuable as a separate index and should be treated as such.

ANALYSIS OF DATA

Either coincidently with a projection of the survey or after all schools have been visited, a spleen index should be computed for each. This simply expresses in percentage the number of enlarged spleens in the school as compared to the number of children examined. In addition the total number of examinations in the county should be divided as to age groups, and a similar procedure should be carried out in the positive cases. A similar history index should be computed from the data obtained on the card. The next procedure is to spot on the map the history and spleen indices. If blood films have been taken the positive findings may also be indicated on the map. When this information is put down one should then be able to answer the following questions:

1. Is there a representative number of examinations in each school district?
2. What is the comparison between the number of schools with the 0 spleen index and those with the fifteen per cent index?
3. Is there an even distribution of ages of children examined and do the positive cases fall evenly throughout all age groups, or is there a concentration in certain groups?
4. What correlation exists between spleen and history rates?

In the final analysis most stress should be placed upon spleen findings. Those schools that show a rate of over five per cent must be considered as having some clinical malaria. The exact computation of percentages on a small number of cases is to be descried. If reasonable sample has been taken and the spleen rate is, for example, eighteen per cent, one must conclude that having ruled out the other causes of splenomegaly, one is dealing with clinical malaria. There is no hard and fast rule that can be laid down by which one can say where, in the light of spleen or other findings, malaria becomes a public health problem. However, with the spleen rate which is above fifteen per cent and remains so over a reasonable period of time one is getting into the realm of malaria as a public health problem. It should definitely be remembered that the history index as well as the blood index are separate guides in their determination of the limits of the problem. There should be some

correlation between all three; the widest variation will probably occur between blood and spleen, especially if the survey is carried out in the winter.

Finally, it is necessary to view these three indices as separate entities and not attempt to make one follow the other.

.....Board of Health

MALARIA SURVEY OF SCHOOL CHILDREN

Date.....

Name of School..... Township..... School District.....

Name..... Age..... Sex..... Color..... Grade.....

Name of Parent or Guardian.....

History of Malaria in past two years:

From Child .....

From Parent .....

Splenomegaly: 0 I II III IV

Blood Examination:

Smear No..... Results of Examination.....

Type of Infection B.T..... E.A..... Q..... Mixed.....

Remarks .....

Signature.....

.....Board of Health

MALARIA SURVEY OF SCHOOL CHILDREN

Date.....

Name of School..... Township..... School District.....

Name..... Age..... Sex..... Color..... Grade.....

Name of Parent or Guardian.....

History of Malaria in past two years:

From Child .....

From Parent .....

Splenomegaly: 0 I II III IV

Blood Examination:

Smear No..... Results of Examination.....

Type of Infection B.T..... E.A..... Q..... Mixed.....

DISCUSSION

Dr. H. A. Taylor, State Board of Health, Raleigh: I have listened to the reading of this paper with a great deal of pleasure, simply because it gives a program or outline which, if properly carried out, will aid health officers in determining the public health importance of malaria in any community. Malariologists say: "We recognize the value in any community of a malarial survey." They all agree that the reliability of the indices will depend to a large extent upon the field experience of the investigator, but by no means do they all agree upon the relative value to be attached to the various indices. Maxcy, for instance, applies the spleen index method to the southern part of India and asks himself two important questions for using other methods. This was after spleen

examination of two thousand children and blood examination of one thousand. Fifty per cent of those showing parasites in the peripheral circulation had enlarged spleens, and twenty-five per cent of those with enlarged spleens had parasites. This, of course, is slightly in favor of spleen examination. Again, in dealing with malaria we are dealing with a moving problem. It is practically impossible to get a clear-cut picture of the disease at rest. The indices will vary, and experience gained in one community may entirely contradict you in another. Again, if we are to accept all palpable spleens on inspiration as evidence of malarial infection, without any reservation whatsoever, I am convinced that we should not attempt to use the term spleen measurement. In my opinion it is more reliable and more dependable. There is only one measurement of the spleen which we could attempt to make, and that very roughly—its length. The costal margin of individuals will differ. For these, as well as other reasons, I do not think we are justified in using the term, measurement of spleen border.

Another fact to which I wish to call your attention is that data as to malaria incidence, whether gathered by history, blood examination or spleen examination, must be correlated with other epidemilogical findings, notably the number of anopheline mosquitoes, especially those that by experiment have been found to be the principal factor. Knowing the mode of transmission of this disease and the factors responsible for its transmission, it appears to me that we have to take all into consideration; and we can not outline any program of control with any assurance of success unless we do.

Another point. It appears to me that in making a malaria survey of a county one of the first steps to be taken would be a canvass of the local physicians in order to determine the incidence and geographic distribution as determined by them, outlining, for instance, on the survey map the areas from which they draw the majority of their practice and indicating what they say are the highly malarious areas of the county. Then go to those places and, by taking group histories, determine for yourself whether or not there is present clinical malaria. If you fail to find fifteen or twenty per cent of the population giving you positive histories, histories with repeated periodicity, then it appears to me useless to make a splenic index or a parasitic index.

Dr. John W. Williams, Health Officer Beaufort County, Washington: My work was confined to malaria control the first two years I was in public health work. We had a parasitic index of forty-six the county over. We worked as hard as we could to control it, and now the epidemiologist comes around and says we were just dealing with an epidemic that would have gone away anyhow. I believe he is right, because we worked hard in our county; and a man in an adjoining county with just as much malaria (and I know it, for I practiced medicine over there) did nothing, and malaria disappeared from his county. I am getting on my feet more as an advertisement for eastern North Carolina than for anything else. Malaria is not a drawback to eastern North Carolina now; it is not present. Our technician has been doing the examinations for twenty-one doctors for a solid year now (and they are

in the habit of sending smears), and she has forgotten, I believe, what a malaria parasite looks like. Therefore Dr. Carley's advice as to how to do malaria surveys is a little too late; no need to lock the stable now. It is my opinion there is no problem of public health in this disease and the time of a well-trained epidemiologist can be better employed with other troubles.

Dr. Carley, closing the discussion: As to the question of palpable spleens (spleens palpable on inspiration), recently Dr. Boyd went up from eastern North Carolina to Ohio, where he found the spleen palpable in a goodly per cent of school children. There was no malaria in that section. Roughly, five or six per cent of children may have enlarged spleens. So I believe, even without the presence of whooping cough, the exanthemata, or influenza, one should discount at least five per cent.

In regard to measuring the size of the spleen, you must remember in doing spleen examinations that the ordinary negro of the south does not show splenomegaly in anything like the proportion that white children do. There may be some anatomical reason for that.

If one is going to do malaria control, one must go into it much more deeply than this. This paper is designed for a rough estimate of whether malaria is present and to what extent. I think we shall find that a majority of the malaria in the United States has gone through in waves, that we have had epidemic malaria from time to time, and that has given places the reputation of having malaria. There is an economic factor, too, which should be considered. In viewing malaria as an epidemic disease, I wonder if Dr. Williams is justified in implying that we might as well quit work, because we might have another epidemic of malaria some day.

REPORT OF COMMITTEE ON DRINKING-CUP ORDINANCE

Dr. C. C. Hudson, Chairman, reported that in view of the many problems presented the committee felt it would be well to have the advice of the Attorney General and also to have the State Board of Health represented on the committee.

The President appointed Mr. H. E. Miller, sanitary engineer of the State Board of Health, as an additional member of the committee, and the committee was continued.

EVENING SESSION

The following officers were elected:
President: Dr. John H. Hamilton, Wilmington
Vice-President: Dr. C. C. Hudson, Greensboro
Secretary: Dr. F. M. Register, Raleigh

REPORT OF COMMITTEE ON PRESIDENT'S ADDRESS

Whereas the President of the North Carolina Public Health Association in his annual address today emphasized in a masterful way some of the problems which are fundamental in health work in North Carolina and pointed out some things which need the attention, the sympathy

and the whole-hearted cooperation of every health officer and every physician in the State, therefore, *be it resolved,* that the North Carolina Public Health Association go on record as approving:

1. An Infant Mortality program which will save more babies' lives, both white and colored;
2. The establishment of a scheme of education for teachers by which they will be better trained for teaching health to our children;
3. An extension of the diphtheria prevention program;
4. A strengthening of all measles control measures;
5. An extension of improved sanitation especially on farms; and
6. The inauguration of a program of prevention of heart diseases.

The program outlined by our President is a wonderful one and every one of us who is at all interested in any phase of health can do no less than approve it and help carry it to a successful conclusion.

Respectfully submitted,
R. L. Carlton,
S. E. Buchanan,
R. E. Broadway,
Committee on President's Address.

Approved.

REPORT OF COMMITTEE ON RESOLUTIONS

Dr. J. H. Epperson, Chairman, presented for the committee the following resolutions, which were adopted:

Resolved, that we give a rising vote of thanks to Dr. E. R. Hardin, president of our organization, and to Dr. F. M. Register, our able, efficient and, shall we say, our venerable secretary, for the splendid program given us.

Resolved, that we express our confidence in the honesty, integrity, and efficiency of the State Board of Health and that we hereby indorse Dr. Charles O'Hagan Laughinghouse and his entire staff of co-workers. We feel that the public mind has never for a moment questioned either their honor or integrity. And be it resolved that we instruct the folks back home to demand a full investigation of the recent scurrilous charges made and that a just reparation be made to those honorable gentlemen.

CLINIC

Dr. C. Ward Crampton, of New York City, gave a lecture on and demonstration of the annual physical examination, as the closing number of the program.

The Public Health Association then adjourned *sine die.*

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